

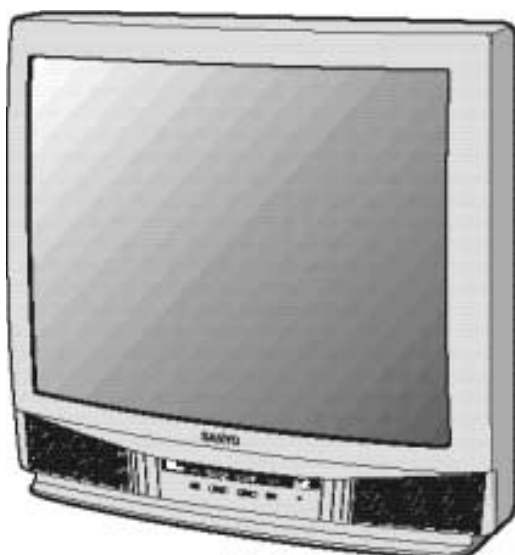


FILE NO.

SERVICE MANUAL

Remote Control Color Television

DS31590 (U.S.A.) ORIGINAL VERSION



Chassis No. 31590-00

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual.

If the Original Version Service Manual Chassis No. does not match the unit's, additional Service Literature is required. You must refer to "Notices" to the Original Service Manual prior to servicing the unit.

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Specifications

Power Rating	120V, 60Hz
	89W (Avg), 2.5A (Max)
Antenna Input Impedance	75 Ω
	UHF/VHF/CATV
Receiving Channel	2 - 13 (VHF),
	14 - 69 (UHF),
	01, 14-94, 95-125 (CATV)
Remote Ready	38 Key Remote Control
Sound Output	1.0 W/CH
Intermediate Frequency	
Picture IF Carrier	45.75MHz
Sound IF Carrier	41.25MHz
Color Sub Carrier	42.17MHz
Picture Tube	M78JUA068X78, A78LKU30X12
Semiconductors	
Integrated Circuits	10
Transistors	39
	Except within Tuner and RC Pre-Amp.
Cabinet Dimensions	
Width	762mm
Height	707mm
Depth	539mm

SAFETY INSTRUCTIONS

SAFETY PRECAUTIONS

WARNING: The chassis of this receiver has a floating ground with the potential of one half the AC line voltage in respect to earth ground. Service should not be attempted by anyone not familiar with the precautions necessary when working on this type of equipment.

The following precautions must be observed:

1. An isolation transformer must be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Comply with all caution and safety-related notes provided on the side of the cabinet, inside the cabinet, on the chassis, and the picture tube.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as control knobs, adjustment covers, shields and barriers.

DO NOT OPERATE THIS TELEVISION RECEIVER WITHOUT THE PROTECTIVE SHIELD IN POSITION AND PROPERLY SECURED.

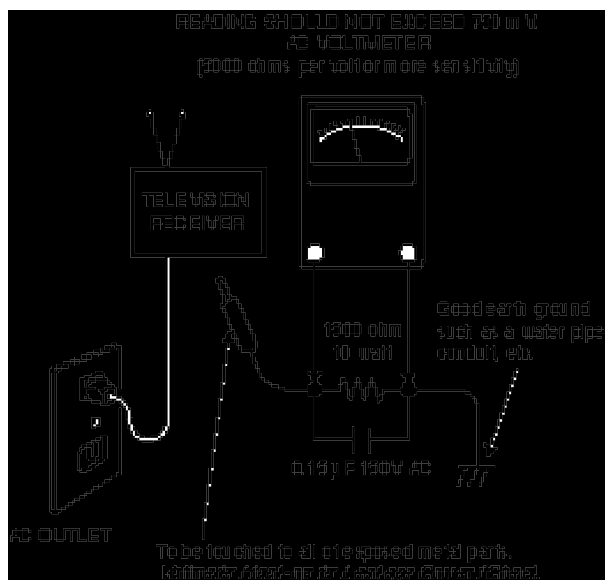
4. Before replacing the back cover of the set, thoroughly inspect the inside of the cabinet to see that no stray parts or tools have been left inside.
Before returning any television to the customer, the service technician must perform the following safety checks to be sure that the unit is completely safe to operate without danger of electrical shock.

ANTENNA COLD CHECK

Remove AC plug from the 120 VAC outlet and place a jumper across the two blades. Connect one lead of an ohmmeter to the jumpered AC plug, and touch the other lead to each exposed antenna terminal (UHF and VHF antenna terminals). The resistance must measure between 1M ohm and 5.2M ohm. Any resistance value below or above this range indicates an abnormality which requires corrective action.

LEAKAGE CURRENT CHECK

Plug the AC line cord directly into a 120 VAC outlet. (Do not use an isolation transformer for this check.) Use an AC voltmeter, that has 5000 ohms per volt or more sensitivity. Connect a 1500 ohm 10 watt resistor, paralleled by a 0.15 μ F 150 VAC capacitor, between a known good earth ground (water pipe, conduit, etc.) and all exposed metal parts of the cabinet (antennas, handle bracket, metal cabinet, screw heads, metal overlays, control shafts, etc.). Measure the AC voltage across the 1500 ohm resistor. The AC voltage should not exceed 750 mV. A reading exceeding 750 mV indicates that a dangerous potential exists. The fault must be located and corrected. Repeat the above test with the receiver power plug reversed.



NEVER RETURN A RECEIVER TO THE CUSTOMER WITHOUT TAKING THE NECESSARY CORRECTIVE ACTION.

X-RADIATION PRECAUTION

The primary source of X-RADIATION in solid-state receivers is the picture tube. The picture tube is specially constructed to limit X-Ray emission. For continued X-RADIATION protection, the replacement tube must be the same type as the original (including the suffix letter in the part numbers). Excessive high voltage may produce potentially hazardous X-RADIATION. To avoid such hazards, the high voltage must be maintained within specific limits. Refer to the X-RADIATION WARNING NOTE on the CHASSIS SCHEMATIC in this service manual for specific high voltage limits. If the high voltage exceeds specified limits, check the components specified on the chassis schematic diagram and take the necessary corrective action. Carefully follow the instructions for the +B Voltage Check and the High Voltage Check to maintain the high voltage within the specified limits.

HIGH VOLTAGE HOLD-DOWN TEST

To prevent X-RADIATION from the picture tube due to excessive high voltage, a HOLD-DOWN circuit is provided in the high voltage circuit. Every time the receiver is serviced, the high voltage HOLD-DOWN circuit must be tested for proper operation. Refer to the HIGH VOLTAGE HOLD-DOWN TEST in service adjustments.

PRODUCT SAFETY NOTICE

When replacing components in a receiver, always keep in mind the necessary product safety precautions. Pay special attention to the replacement of components marked with a

SERVICE ADJUSTMENTS

GENERAL

This set has an On-screen Service Menu system included in the CPU that allows remote operation for most of the service adjustments.

IC802 (EEPROM) REPLACEMENT

When IC802 (EEPROM) is replaced, IC801 (CPU) will automatically write the initial reference data into IC802 for basic TV operation. However, the bus data should be checked and some bus data should be set up before attempting the service adjustments. (See pages 4 – 5 for detailed information.)

INITIAL BUS DATA SETUP

Note: When IC802 (EEPROM) is replaced, the Service Menu NO. 01 HP (H Phase), NO. 14 AF (Auto Flesh), NO. 24 AG (AFC Gain), NO. 26 SCO (Sub Color), NO. 27 STI (Sub-Tint), NO. 29 OPT (Option 1), NO. 30 OP2 (Option 2), and NO. 31 HR (OSD Display H-Position) should be set up for proper TV operation before attempting the service adjustments.

1. Disconnect the AC power cord (AC 120V line).
2. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
3. Select NO. 01 HP (H Phase) with ▲ or ▼ key. Adjust the data with + or – key for 20.
4. Select NO. 14 AF (Auto Flesh) with ▲ or ▼ key. Adjust the data with + or – key for 1.
5. Select NO. 24 AG (AFC Gain), with ▲ or ▼ key. Adjust the data with + or – key for 0.
6. Select NO. 26 SCO (Sub Color) with ▲ or ▼ key. Adjust the data with + or – key for 8.
7. Select NO. 27 STI (Sub Tint) with ▲ or ▼ key. Adjust the data with + or – key for 19.
8. Select NO. 29 OPT (Option 1) with ▲ or ▼ key. Adjust the data with + or – key for 36.
9. Select NO. 30 OPT2 (Option 2) with ▲ or ▼ key. Adjust the data with + or – key for 72.
10. Select NO. 31 HR (OSD Display H-Position) with ▲ or ▼ key. Adjust the data with + or – key for 47.
11. Press the MENU key to turn off the Service Menu display.

ON-SCREEN SERVICE MENU SYSTEM

1. Enter the Service Menu:

- While pressing the MENU key, reconnect the AC power cord. The Service Menu Display will now appear. (See Figure 1

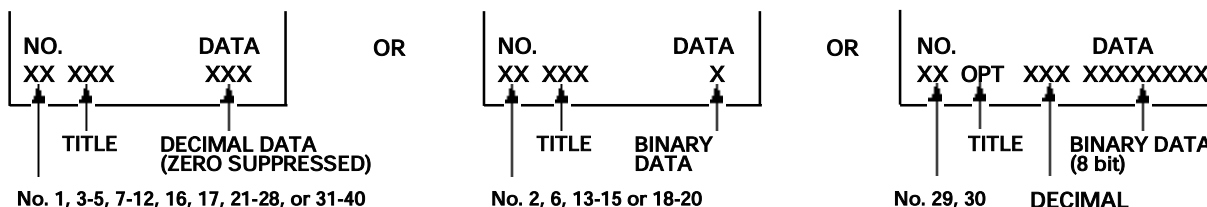


Figure 1. Service Menu Display

below.)

2. Service Adjustments:

- Press the ▲ or ▼ key to select the desired service menu you want to adjust. (See page 4 for On-screen Service Menu.)
- Use the + or – key to adjust the data.

3. Exit from the Service Menu:

- Press the MENU key to turn off the Service Menu display.

Table 1. ON-SCREEN SERVICE MENU

When IC802 (EEPROM) is replaced, check the bus data to confirm they are the same as below. The shaded menu should be checked and be set up or readjusted according to the procedures described in the following pages. Initial Setup Data marked with an * should be changed from Initial Reference Data. (See page 3 for Initial Bus Data Setup.)

NO.	TITLE	INITIAL REFERENCE DATA	INITIAL SETUP DATA	RANGE OF DATA	FUNCTION
01	HP	15	17*	0~20	H-Phase (H-Centering)
02	IAS	0	0	0, 1	IF AGC Switch 0: TV (Normal) 1: AV (IF Gain Minumum)
03	RAD	25	25	0~63	RF AGC Delay
04	PT	64	64	0~127	PLL Tuning
05	ADA	31	31	0~63	APC Detect Adjust
06	CD	0	0	0, 1	C-Diff
07	VS	32	32	0~63	Vertical Size
08	RB	0	0	0~255	Red Bias
09	GB	0	0	0~255	Green Bias
10	BB	0	0	0~255	Blue Bias
11	RD	60	60	0~127	Red Drive
12	BD	60	60	0~127	Blue Drive
13	TDS	0	0	0, 1	Trap & D (B.P.F.) Switch 0: OFF 1: ON
14	AF	0	1*	0, 1	Auto Flesh 0: OFF 1: ON
15	BS	0	0	0, 1	Black Stretch 1: OFF 0: ON
16	VL	4	4	0~7	Video Level
17	FL	15	15	0~31	FM Level
18	NIS	1	1	0, 1	N/I Switch (Black Noise Inverter) 1: OFF 0: ON
19	ABL	1	1	0,1	ABL Defeat 0: OFF 1: ON
20	WP	1	1	0,1	White Peak Limiter 1: OFF 0: ON
21	GD	7	7	0~15	Green Drive Reduction
22	VC	0	0	0~7	Vert. Comp
23	VD	32	32	0~63	Vert. DC
24	AG	3	0*	0~3	AFC Gain 00: Auto 01: High Gain 10: Low Gain 11: Non-Gate
25	SB	32	32	0~63	Sub-Brightness
26	SCO	10	8*	0~31	Sub-Color
27	STI	14	19*	0~31	Sub-Tint
28	SSH	8	8	0~15	Sub-Sharpness
29	OPT	0	36*	0~255	Option 1 (See Note 1 page 5.)
30	OP2	0	72*	0~255	Option 2 (See Note 2 page 5.)
31	HR	43	47*	0~63	H-Position (OSD H-Position)
32	INP	32	32	0~63	Input Level (Composite Input)
33	STE	32	32	0~63	Stereo VCO
34	FIL	63	63	0~63	fH Reject Filter
35	LSP	32	32	0~63	Low Separation
36	HSP	32	32	0~63	Hi Separation
37	SPV	32	32	0~63	SAP VCO
38	PCO	32	32	0~63	PIP Color
39	PTI	32	32	0~63	PIP Tint
40	DRV	55	60*	0~127	Red drive Adjustment (See Note 3 page 5.)
		55	60*	0~127	Blue Drive Adjustment (See Note 3 page 5.)
	-	0	0	0~255	Red Bias Adjustment (See Note 4 page 5.)
	-	0	0	0~255	Green Bias Adjustment (See Note 4 page 5.)
41	-	0	0	0~255	Blue Bias Adjustment (See Note 4 page 5.)
	-	0	0	0~255	Blue Bias Adjustment (See Note 4 page 5.)

SERVICE ADJUSTMENTS (Continued)

PROGRAM CODES

The microprocessor used in this model is a multi-purpose type and is used in several different models. To ensure proper operation and the correct features for your particular model, the Program Codes must be correct.

Note 1. Option Data 1 (NO. 29 OPT) should be decimal 36 (00100100 binary). See page 3 INITIAL DATA SETUP, step 9, for set up procedure. If this program code is wrong the TV will not operate properly.

BIT	FUNCTION	DATA	
		0	1
0, 1	TV HOTEL MONITOR	00: TV 01: HOTEL 10: MONITOR (*1) 11: INHIBITED (=TV)	
2	VIDEO INPUT	NONE (*2)	YES
3, 4	CLOCK	00: NONE 01: YES (AC 60 HZ) 10: YES (INT OSC) 11: INHIBITED (=NONE)	
5	STEREO/MONO	MONO (*3)	STEREO
6, 7	SURROUND	00: NONE 01: YES 10: Q-SOUND 11: INHIBITED (=NONE)	

Note 2. Option Data 2 (NO. 30 OPT 2) should be decimal 72 (01001000 binary). See page 3 INITIAL DATA SETUP, step 10, for set up procedure. If this program code is wrong the TV will not operate properly.

BIT	FUNCTION	DATA	
		0	1
0	NOT USED	—	—
1	COLOR ENHANCER	NONE	YES
2	INITIAL CHANNEL	NONE	YES (*4)
3	BEAM DET	NONE	YES
4	PIP	NONE	YES
5	NOT USED	—	—
6	NOT USED	—	—
7	NOT USED	—	—

*1. When the Monitor option is used, the CPU regards the Video Input option as Yes and the PIP option as None.

*2. When the None Video Input option is used, the CPU regards the PIP option as None.

*3. When the Mono option is used, the CPU regards the Surround option as None.

*4. When the Initial Channel option is used the Initial Channel, Favorite Channel, Parental Control and XDS (Extended Data Service) features are available.

Note 3. Red/Blue Drive Adjustments in Service Menu NO. 40 DRV: Adjust Red and Blue Drive Levels alternately with 1, 3, 7, and 9 keys on the remote control. (See figure 2.) The Drive Level adjustment data will be written in the Service Menu No. 11 and 12 automatically.

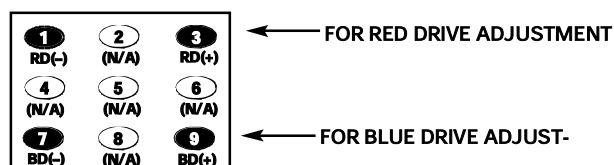


Figure 2.

Note 4. Red/Green/Blue Bias Adjustments in Service Menu NO. 41: Adjust each Bias Level with 1, 3, 4, 6, 7, or 9 key on the remote control. (See figure 3.) The Bias Level adjustment data will be written in the Service Menu No. 08 ~ 10 automatically.



Figure 3.

SERVICE ADJUSTMENTS (Continued)

ANTENNA CONNECTIONS

This receiver is designed for UHF/VHF reception. A 75 ohm terminal is provided for UHF and VHF receptions. When connecting a CATV antenna system, connect the 75 ohm coaxial cable directly to the 75 ohm terminal. For 300 ohm VHF antenna, use an adapter (not included with the TV set).

CIRCUIT PROTECTION

Fuse F601 (4A) is included in the AC line. This fuse must be replaced with the proper fuse (see Parts List).

CAUTION



FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH THE SAME TYPE 4A, 125V FUSE.

+B VOLTAGE CHECK

Connect Voltmeter + lead to TJ1 130V and – lead to ground (TE7). Connect receiver to AC 120V line. Tune receiver to an active channel. Reset the picture controls to the FACTORY PRESET levels (press remote control RESET key twice). Voltage must measure between +128.0V and 132.0V. If the voltage is out of this range, the power circuit must be checked. No +B adjustment is provided on this chassis.

HORIZONTAL WIDTH ADJUSTMENT

1. Tune receiver to an active channel.
2. Adjust H-Width Control (VR461) for proper width.
3. Select several other channels and check width.

HORIZONTAL CENTERING ADJUSTMENT

1. Tune receiver to an active channel.
2. Check that picture is in the horizontal center of TV screen.
If picture is not centered horizontally, perform steps 3 ~ 6.
3. Turn off the receiver and disconnect the AC power cord (120V AC line).
4. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 01 HP (Horizontal Phase) with ▲ or ▼ key.
6. Adjust the data with + or – key for proper horizontal center. To turn off the Service Menu display, press the MENU key.

VERTICAL SIZE ADJUSTMENT

1. Tune receiver to an active channel.
2. Check the vertical size of the picture. If the vertical size is too large or small, perform steps 3 ~ 6.
3. Turn off the receiver and disconnect the AC power cord (120V AC line).
4. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 07 VS (Vertical Size) with ▲ or ▼ key.
6. Adjust the data with + or – key for full scan. To turn off the Service Menu display, press the MENU key.

VERTICAL CENTERING ADJUSTMENT

1. Tune receiver to an active channel.
2. Check that picture is in the vertical center of TV screen. If picture center is too low, replace resistor R513 (1K ohm, 1/2W) with 470 ohm, 1W resistor. If picture center is too high,

remove resistor R513 (1K ohm, 1/2W).

GRAYSCALE ADJUSTMENT

1. Set the picture controls to the Sports levels or Reset (use MENU key and ▲ or ▼ key or RESET key).
2. Turn off the receiver and disconnect the AC power cord (120V AC line).
3. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
4. Select NO. 08 RB (Red Bias), NO. 09 GB (Green Bias), and NO. 10 BB (Blue Bias) with ▲ or ▼ key and set each data to 0 with + or – key.
5. Select NO. 11 RD (Red Drive) and NO. 12 BD (Blue Drive) with ▲ or ▼ key and set each data to 60 with + or – key.
6. Set NO. 21 GD (G Drive Reduction) data to 7, NO. 25 SB (Sub-Brightness) data to 32, NO. 26 SCO (Sub-Color) data to 10, NO. 27 STI (Sub-Tint) to 17 and NO. 28 SSH (Sub-Sharpness) data to 8 with ▲ or ▼, and + or – keys.
7. Turn Screen Control (T402) to minimum (fully counter-clockwise).
8. Select the Service Menu NO. 41 (Bias Adjustments) with ▲ or ▼ key.
9. Advance Screen Control (T402) clockwise to obtain just visible one color line. If line does not appear, place this control to maximum (fully clockwise).



Figure 4. Remote Control Number keys' function in Service Menu NO. 41

10. Raise each Bias Level with 3, 6, and 9 keys to obtain just visible white line. (See Figure 4 below.)
11. Select the Service Menu NO. 40 DRV (Drive Adjustments) with ▲ or ▼ key.
12. Adjust Red and Blue Drive Levels alternately with 1, 3,

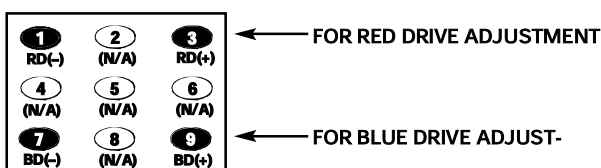


Figure 5. Remote Control Number keys' function in Service Menu NO. 40 DRV

- 7, or 9 key to produce normal black and white picture in highlight areas. (See figure 5 below.)
13. Check for proper grayscale at all brightness levels. To turn off the Service Menu display, press the MENU key.

Note: If Grayscale Adjustment is made after picture tube replacement, check Brightness Level Adjustment.

FOCUS ADJUSTMENT

Adjust focus control (T402) for well defined scanning lines.

PLL TUNING ADJUSTMENT

Note: PLL Tuning must be adjusted after IC101 (Signal Processor), IC802 (EEPROM) or T151 (PLL VCO Coil) is replaced.

1. Disconnect the AC power cord (120V AC line).
2. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
3. Select NO. 04 PT (PLL Tuning) with ▲ or ▼ key.
4. Adjust the data to 64 with + or – key.
5. Disconnect the AC power cord (120V AC line).
6. Connect voltmeter + lead to TP113 on main board and – lead to main board ground.
7. Press and Hold the POWER key on the front control panel while connecting the AC power cord. TV will turn on.
8. Disconnect the antenna terminal and select a good quality active color channel in your area, using keys 0 ~ 9 on the remote control. Wait a few seconds, and then reconnect the antenna terminal.
9. Turn PLL VCO coil (T151) on main board fully clockwise, and then gradually turn the coil counterclockwise until voltage is at the maximum level (approximately 6.7 VDC). Continue to turn the coil counterclockwise until the voltage is at the minimum level (approximately 0.7 VDC), and then turn the coil clockwise until voltage indicates 3.8 ± 1.0 VDC. Voltage change in the coil adjustments is shown in Figure 6.
10. Disconnect voltmeter from chassis.

Select every active channel with keys 0 ~ 9 and the scanning keys, and check to be sure the AFT is operating properly.

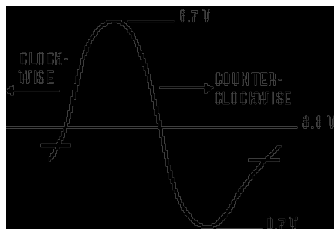


Figure 6. Voltage Change in Coil Adjustment

RF-AGC ADJUSTMENT

1. Tune receiver to strongest VHF station in your area.
2. Set contrast and brightness controls for maximum.
3. Turn off the receiver and disconnect the AC power cord (120V AC line).
4. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 03 RAD (RF-AGC Delay) with ▲ or ▼ key.
6. Adjust the data with + or – key in the direction which causes snow to appear; then in the opposite direction until the snow just disappears.
7. To turn off the Service Menu display, press the MENU key.

BRIGHTNESS LEVEL ADJUSTMENT

Note: Grayscale, RF-AGC, Video Level and High Voltage Check must be adjusted before attempting Brightness Level Adjustment.

1. Connect a color-bar generator to the antenna terminals.
2. Switch the generator to the crosshatch pattern.
3. Reset the picture controls to the Sports levels.

4. Connect voltmeter (high impedance) + lead to terminal TP51 and – lead to terminal TP50 on main board. Set voltmeter for 1.5V ~ 3V range.
5. Turn off the receiver and disconnect the AC power cord (120V AC line).
6. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
7. Select NO. 25 SB (Sub Brightness) with ▲ or ▼ key.
8. Adjust the data with + or – key for 820mVDC.
9. Press the MENU key to turn off the Service Menu display.
10. Check brightness level on every active channel, readjust (repeat steps 5 ~ 9) if necessary).

Note: Do not set to excessive brightness level, otherwise the contrast level will be suppressed.

HIGH VOLTAGE HOLD-DOWN TEST

Every time the receiver is serviced, the HIGH VOLTAGE HOLD-DOWN circuit must be tested for proper operation by following these steps:

1. Connect receiver to 120V AC line. Tune receiver to active channel. Reset the picture controls to the News levels.
2. Check that the voltage measured between TP7 and TE7 (ground side) is within 16.5 VDC to 21 VDC. If the voltage is out of this range, the Hold-Down Circuit must be checked.
3. Connect a DC Voltage supply to TP7 and TE7 through a 100 ohm 1/4W resistor. Adjust the DC voltage to 23 VDC. The receiver should shutdown, losing raster and sound. Then the receiver should turn off automatically. This reaction indicates that the Hold-Down circuit is functioning properly. If the receiver does not shutdown, a malfunction is indicated and its cause **must** be found and corrected.
4. To obtain picture again, remove the DC Supply and wait a few minutes. Now turn on the receiver.

HIGH VOLTAGE CHECK

Note: +B (+130V) Voltage Check and Grayscale Adjustment must be completed before attempting High Voltage Check.

1. Connect high voltage voltmeter negative lead to ground, and connect + lead to anode of picture tube.
2. Tune receiver to an active channel and confirm TV is operating properly.
3. Eliminate the beam current by adjusting the contrast and brightness controls to minimum.
4. Confirm high voltage is within 29.0 KV and 31.0 KV. If reading is not within range, check horizontal circuit.

No high-voltage adjustment is provided on this chassis.

SOUND ADJUSTMENT

1. Connect Voltmeter – lead to ground and + lead IC101 Pin 50 (FM DET OUT).
2. Tune receiver to an active channel and fine tune to obtain the best picture.
3. Confirm D.V.M. reading of 3.85 ± 0.2 VDC.
4. If the voltage is out of this range, adjust Sound I.F. Transformer (T131) for 3.85 ± 0.2 VDC.

SERVICE ADJUSTMENTS (Continued)

MULTI-SOUND SECTION ADJUSTMENTS

Note: Multi-Sound Section must be adjusted after IC101 (Signal Processor), IC3401 (MTS Decoder), IC802 (EEPROM), or T131 (Sound I.F. transformer) is replaced.

INPUT LEVEL ADJUSTMENT

1. Turn off the receiver and disconnect the AC power cord (AC 120V line).
2. Connect audio signal generator output (300 Hz, 150 mVrms) to TP301 and ground.
3. Ground TP21 with a short jumper lead.
4. Connect voltmeter (RMS) to TP317 and ground.
5. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
6. Select NO. 32 INP (Input Level) with the ▲ or ▼ key.
7. Adjust the + or – key for a voltmeter reading of $400 \pm 5\%$ mVrms at TP317.

STEREO VCO ADJUSTMENT

8. Turn off the receiver and disconnect the AC power cord (AC 120V line).
9. Remove signal generator from TP301 and voltmeter from TP317.
10. Connect frequency counter to TP317 and ground.
11. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
12. Select NO. 33 STE (Stereo VCO) with the ▲ or ▼ key.
13. Adjust the + or – key for a frequency counter reading of 15.734 ± 0.1 KHz at TP317.

FILTER ADJUSTMENT

14. Turn off the receiver and disconnect the AC power cord (AC 120V line).
15. Remove frequency counter from TP317.
16. Connect audio signal generator output (15.734 KHz, 100 mVrms) to TP301 and ground.
17. Connect voltmeter (RMS) to TP317 and ground.
18. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
19. Select NO. 34 FIL (Filter) with the ▲ or ▼ key.
20. Adjust the + or – key until voltage is at trap point. Voltage change in the filter adjustments is shown in Figure 7.

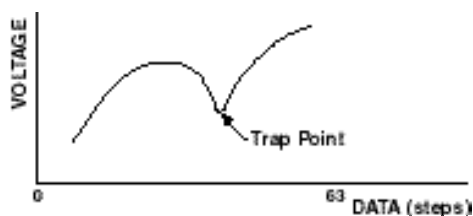


Figure 7. Filter Adjustment

SEPARATION ADJUSTMENT

21. Turn off the receiver and disconnect the AC power cord (AC 120V line).
22. Remove jumper lead from TP21, signal generator from TP301 and voltmeter from TP317.
23. Connect oscilloscope CH1 to TP317 and CH2 to TP318 and ground.
24. Connect an MTS TV/Stereo generator to antenna terminal.
25. Select pilot, 300Hz audio frequency and Left modulating signal.
26. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
27. Select NO. 35 LSP (Low Separation) with the ▲ or ▼ key.
28. Adjust the + or – key for minimum low frequencies at TP317. (See Figure 8.)
29. Select 4 KHz audio frequency and Right modulating signal.
30. Select NO. 36 HSP (High Separation) with the ▲ or ▼ key.
31. Adjust the + or – key for minimum high frequencies at TP318. (See Figure 8.)

Repeat adjustments (steps 27–31) until no further decreases

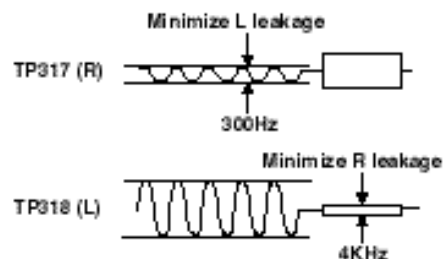


Figure 8. Separation Adjustments

in amplitude can be obtained.

SAP VCO ADJUSTMENT

32. Turn off the receiver and disconnect the AC power cord (AC 120V line).
33. Remove oscilloscope from TP317 and TP318, and MTS TV/Stereo generator from antenna terminal.
34. Connect frequency counter to TP317 and ground.
35. Ground TP21 with a short jumper lead.
36. Connect a 1 MΩ resistor between TP316 and ground.
37. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
38. Select NO. 37 SPV (SAP VCO) with the ▲ or ▼ key.
39. Adjust the + or – key for a frequency counter reading of 78.67 ± 0.5 KHz at TP317.
40. Press the MENU key to turn off the Service Menu display.

PURITY AND CONVERGENCE ADJUSTMENTS

Purity and Convergence have been aligned at the factory. No re-alignment is necessary.

SERVICE HINTS

POWER FAILURE DETECTOR

This set is equipped with a Power Failure Detector function included in the CPU which checks for an abnormal condition in the chassis power supplies, including the power supply derived from the Horizontal Output Transformer.

If, while the power is on, a failure is caused by any of the following which results in a low voltage supply, the CPU will turn the set off in 1.5 seconds to prevent unnecessary damage:

- Failure within the power supply circuits.
- A short circuit in the load side from the supply.
- Stoppage of the Horizontal Output Oscillator caused by the X-Radiation protection Hold-Down Circuit.

If, while the power is off, the power is switched on and any of these failures remains uncorrected, the CPU will shut off the power within 3 seconds.

Check the following if the set is turned off by the power failure detector.

1. Disconnect the AC power cord (120V AC line) for at least 10 seconds.
2. Connect a DC Voltmeter to the following TEST POINTS.

TJ5	9V
TJ7	7.6V
D312 Cathode	5V
D429 Cathode	5V

3. Press the power key and check for the proper voltage supplies.
4. If any of these voltages is low, the power failure detector should turn the set off within 3 seconds.
5. Check all circuits listed above.

Note: This set is equipped with a Power Surge Protection feature included in the CPU. If power failure occurs three times within 15 minutes, the CPU will automatically stop functioning to help prevent secondary damage. (TV will not turn on by pressing the power key.) To reset the operating programs within the CPU, disconnect the AC power cord for at least 10 seconds.

MECHANICAL DISASSEMBLIES

CABINET BACK REMOVAL

1. Refer to Figure 1, remove 12 screws.
2. Pull off cabinet back and remove.

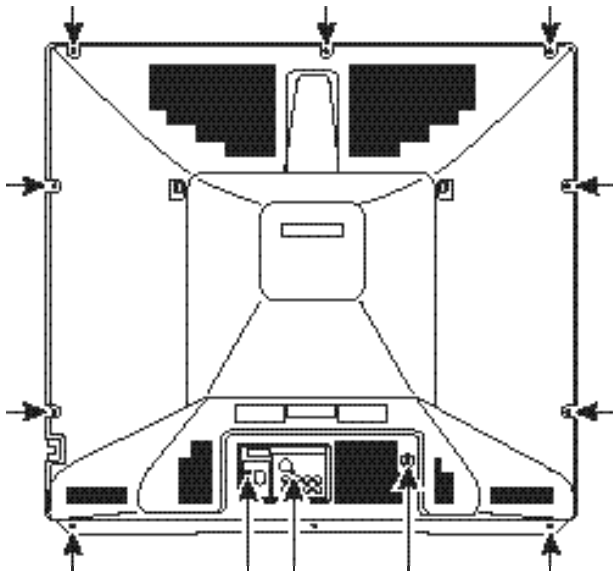


Figure 1. Cabinet Back Removal

CHASSIS REMOVAL

1. Remove cabinet back.
2. Discharge the picture tube anode (2nd anode lead) to the dag coating (picture tube grounding lead).
3. Disconnect Degaussing coil socket (KD), Picture tube socket, Deflection yoke connector (KX), Speakers connector (K58N), S-Video connector (K58M) picture tube ground leads, and 2nd anode lead.
4. Remove chassis completely by sliding it straight back.

PICTURE TUBE REMOVAL

CAUTION: Do not disturb the deflection yoke or magnet assembly on the picture tube neck. Care must be taken to keep these assemblies intact, unless picture tube is being replaced. Discharge the picture tube to the coating before handling the tube.

1. Remove chassis, referring to Chassis Removal instructions.
2. Place cabinet's front face down on a soft surface.
3. Remove the screw on each corner of the picture tube and GENTLY lift the picture tube out of the cabinet.
4. Install a replacement picture tube in reverse order. Properly install the degaussing coil and picture tube grounding lead on the picture tube. See Figure 2.

Note: If Picture Tube is being replaced, mount the Degaussing Coil properly on the tube. See Figure 2.

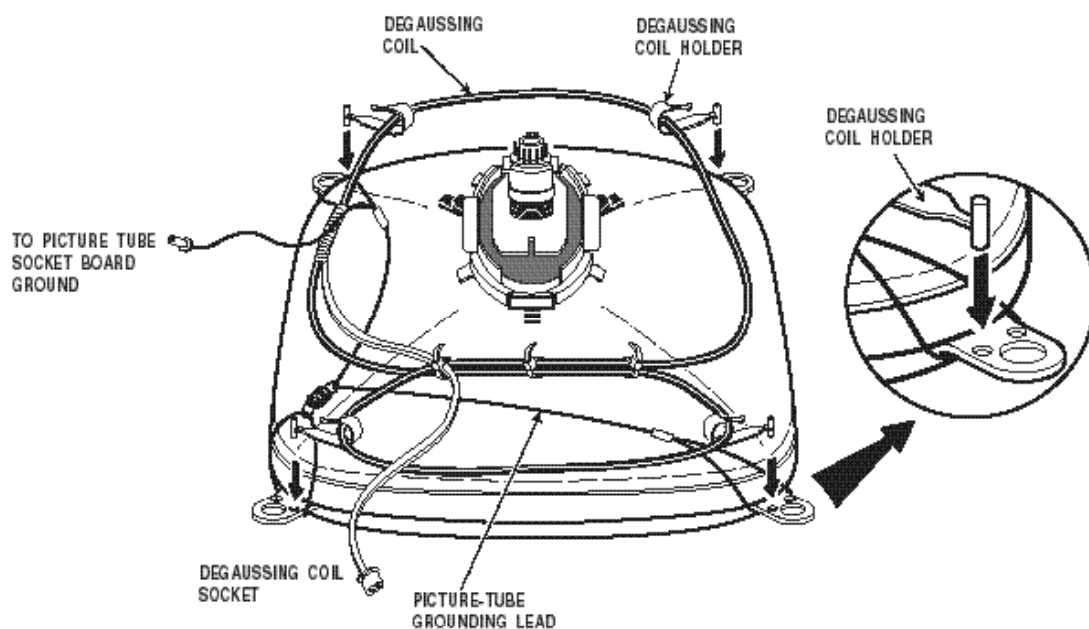


Figure 2. Picture Tube Removal

CHASSIS ELECTRICAL PARTS LIST

CAUTION: To Protect against electrical shock and for continued product safety, refer to **SAFETY PRECAUTIONS, X-RADIATION PRECAUTIONS, HIGH VOLTAGE HOLD-DOWN TEST, and PRODUCT SAFETY NOTICE** on Page 2.

PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A REPLACEMENT IS MADE IN ANY AREA OF A RECEIVER. COMPONENTS INDICATED BY A STAR (★) IN THIS PARTS LIST AND THE SCHEMATIC DIAGRAM DESIGNATE COMPONENTS IN WHICH SAFETY CAN BE OF SPECIAL SIGNIFICANCE. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS DESIGNATED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENT REPLACEMENT DESIGNATED BY A STAR. NO DEVIATIONS FROM RESISTANCE, WATTAGE, AND VOLTAGE RATINGS MAY BE MADE FOR REPLACEMENT ITEMS DESIGNATED BY A STAR.

Notes: Parts having Location Number are located on the following boards.

Numbers under 700 SeriesOn the Main Board.
 Numbers 700 SeriesOn the Picture Tube Socket Board.
 Numbers 800 SeriesOn the Main Board
 Numbers 900 SeriesOut of Board.
 Numbers 1000 SeriesOn the Main Board
 Numbers 1900 seriesOn the Main Board
 Numbers 3400 seriesOn the Main Board

Note: Schematic part location numbers may not always match with the part descriptions.
 The part descriptions are correct and should be used.

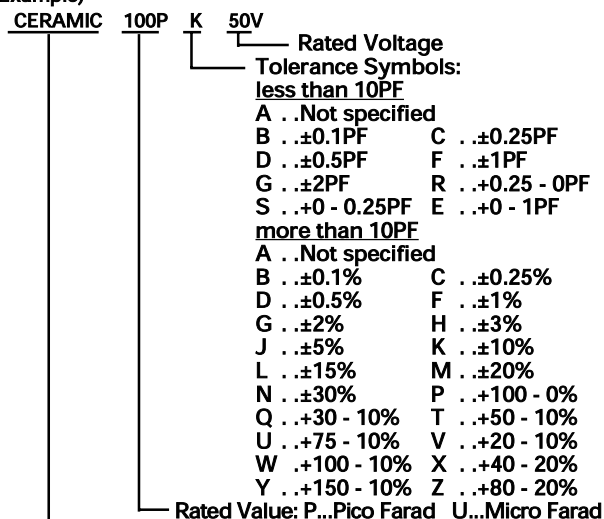
Schematic Location	Part No.	Description
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CAPACITORS

NOTES:

Read description of the Capacitor as follows:

(Example)



Material:

CERAMICCeramic
 MT-PAPERMetallized Paper
 POLYESTER ...Polyester
 MT-POLYEST ...Metallized Polyester
 POLYPROPolypropylene
 MT-POLYPRO ...Metallized Polypropylene
 COMPO-FILM ...Composite Film
 MT-COMPO ...Metallized Composite
 STYRENEStyrene
 TA-SOLIDTantalum Solid
 AL-SOLIDAluminum Solid
 ELECTElectrolytic
 NP-ELECTNon-Polarized Electrolytic
 OS-SOLIDAluminum Solid with Organic
 Semiconductive Electrolytic

Schematic Location	Part No.	Description
C001	403 049 0008	ELECT 1U M 50V
C002	403 049 0008	ELECT 1U M 50V
C003	403 074 7617	CERAMIC 5600P K 50V
C004	403 074 7617	CERAMIC 5600P K 50V
C010	403 044 1703	ELECT 470U M 16V
C011	403 044 1703	ELECT 470U M 16V
C015	403 044 1703	ELECT 470U M 16V
C016	403 069 9510	CERAMIC 0.01U Z 50V
C101	403 039 3507	ELECT 470U M 6.3V
C103	403 069 9510	CERAMIC 0.01U Z 50V
C104	403 038 8602	ELECT 33U M 6.3V
C106	403 050 6600	ELECT 3.3U M 50V
C131	403 049 0008	ELECT 1U M 50V
C133	403 069 9510	CERAMIC 0.01U Z 50V
C142	403 062 7107	POLYESTER 0.056U K 50V
	403 312 2609	POLYESTER 0.056U K 50V
C143	403 069 9510	CERAMIC 0.01U Z 50V
C147	403 043 9106	ELECT 47U M 16V
C151	403 048 6308	ELECT 0.47U M 50V
C161	403 069 9510	CERAMIC 0.01U Z 50V
C166	403 020 0419	CERAMIC 27P J 50V
C202	403 069 8315	CERAMIC 0.01U Z 50V
C208	403 041 8804	ELECT 10U M 16V
C211	403 049 0008	ELECT 1U M 50V
C212	403 049 9803	ELECT 2.2U M 50V
C221	403 041 8804	ELECT 10U M 16V
C252	403 060 8403	POLYESTER 0.033U K 50V
	403 312 1305	POLYESTER 0.033U K 50V
C253	403 049 9803	ELECT 2.2U M 50V
C256	403 041 4509	ELECT 470U M 10V
C258	403 041 8804	ELECT 10U M 16V
C272	403 050 6600	ELECT 3.3U M 50V
C300	403 069 9510	CERAMIC 0.01U Z 50V
C303	403 070 2616	CERAMIC 0.1U Z 50V
C304	403 043 9106	ELECT 47U M 16V
C307	403 018 0513	CERAMIC 22P J 50V

Schematic Location	Part No.	Description
C308	403 022 8215	CERAMIC 33P J 50V
C309	403 041 8804	ELECT 10U M 16V
C310	403 069 9510	CERAMIC 0.01U Z 50V
C312	403 048 6308	ELECT 0.47U M 50V
C313	403 069 9510	CERAMIC 0.01U Z 50V
C314	403 069 9510	CERAMIC 0.01U Z 50V
C315	403 011 4914	CERAMIC 120P J 50V
C316	403 069 9510	CERAMIC 0.01U Z 50V
C317	403 014 9213	CERAMIC 180P J 50V
C318	403 069 9510	CERAMIC 0.01U Z 50V
C322	403 069 9510	CERAMIC 0.01U Z 50V
C323	403 069 9510	CERAMIC 0.01U Z 50V
C331	403 069 9510	CERAMIC 0.01U Z 50V
C332	403 039 3507	ELECT 470U M 6.3V
C336	403 024 2112	CERAMIC 39P J 50V
C341	403 018 0513	CERAMIC 22P J 50V
C342	403 033 4510	CERAMIC 82P J 50V
C343	403 009 5718	CERAMIC 100P J 50V
C344	403 069 9510	CERAMIC 0.01U Z 50V
C351	403 050 6600	ELECT 3.3U M 50V
C352	403 070 5518	CERAMIC 1200P K 50V
C371	403 048 6308	ELECT 0.47U M 50V
C401	403 052 7308	ELECT 100U M 35V
C403	403 059 6205	POLYESTER 0.022U K 50V
	403 312 0506	POLYESTER 0.022U K 50V
C405	403 051 0607	ELECT 4.7U M 50V
C406	403 076 3617	CERAMIC 470P K 500V
C407	403 076 0517	CERAMIC 2200P K 500V
C408	403 103 0005	ELECT 4.7U M 160V
★ C411	404 069 6407	MT-POLYPRO 8600P H 1.5K
	404 077 5003	MT-POLYPRO 8600P H 1.5K
★ C412	404 068 6200	MT-POLYPRO 8000P H 1.5K
	404 077 4709	MT-POLYPRO 8000P H 1.5K
★ C413	403 083 4911	POLYPRO 0.027U J 400V
★ C414	403 083 3914	POLYPRO 0.018U J 400V
★ C416	403 082 9016	POLYPRO 0.27U J 200V
★ C417	403 082 9818	POLYPRO 0.33U J 200V
C419	403 158 9107	MT-POLYEST 2.2U K 100V
C421	403 038 6301	ELECT 220U M 6.3V
C422	403 066 6106	MT-POLYEST 0.47U J 250V
C426	403 039 3507	ELECT 470U M 6.3V
C461	403 051 0607	ELECT 4.7U M 50V
C462	403 038 1603	ELECT 100U M 6.3V
C466	403 047 3100	ELECT 47U M 25V
C470	403 166 7716	MT-POLYEST 0.47U J 63V
	403 067 7805	MT-COMPO 0.47U J 50V
C482	403 115 0802	ELECT 22U M 100V
C484	403 051 0607	ELECT 4.7U M 50V
C486	403 076 3617	CERAMIC 470P K 500V
C487	403 052 8503	ELECT 1000U M 35V
C493	404 056 5307	NP-ELECT 2.2U M 100V
C497	403 039 6508	ELECT 100U M 10V
C502	403 053 2104	ELECT 220U M 35V
C503	403 205 4703	ELECT 4.7U K 25V
C504	403 045 9807	ELECT 2200U M 25V
C505	403 166 8010	MT-POLYEST 0.33U J 63V
	403 067 7300	MT-COMPO 0.33U J 50V
C506	403 059 0104	POLYESTER 0.018U K 50V
	403 312 0100	POLYESTER 0.018U K 50V

Schematic Location	Part No.	Description
C509	403 166 7716	MT-POLYEST 0.47U J 63V
	403 067 7805	MT-COMPO 0.47U J 50V
C511	403 057 3107	POLYESTER 0.1U K 50V
	403 311 8909	POLYESTER 0.1U K 50V
C516	403 041 8804	ELECT 10U M 16V
★ C601	404 071 2404	MT-POLYEST 0.22U M 250V
	404 066 2204	MT-POLYEST 0.22U M 275V
★ C608	403 247 5508	CERAMIC 4700P K 1K
	403 232 0600	CERAMIC 4700P K 1K
C609	404 075 5005	ELECT 470U M 200V
C612	403 166 8218	MT-POLYEST 0.18U J 63V
	403 067 6501	MT-COMPO 0.18U J 50V
C613	403 214 5203	POLYESTER 0.012U J 50V
	403 311 9203	POLYESTER 0.012U J 50V
C620	403 214 5203	POLYESTER 0.012U J 50V
	403 311 9203	POLYESTER 0.012U J 50V
C622	403 044 1703	ELECT 470U M 16V
★ C625	403 232 0402	CERAMIC 2700P K 1K
C626	403 043 1902	ELECT 2200U M 16V
C628	404 037 0703	ELECT 470U M 160V
C629	403 043 0202	ELECT 220U M 16V
C630	403 049 0008	ELECT 1U M 50V
★ C631	404 008 6604	CERAMIC 1000P K 125V
	404 046 5409	CERAMIC 1000P M 125V
	404 073 4000	CERAMIC 1000P M 250V
★ C632	404 008 6802	CERAMIC 2200P M 125V
	404 046 5003	CERAMIC 2200P M 125V
	404 073 4604	CERAMIC 2200P M 250V
C634	403 043 9106	ELECT 47U M 16V
C683	403 038 6301	ELECT 220U M 6.3V
C688	403 042 2405	ELECT 100U M 16V
C689	403 070 2616	CERAMIC 0.1U Z 50V
C693	403 049 0008	ELECT 1U M 50V
C701	403 049 0008	ELECT 1U M 50V
C703	403 075 4219	CERAMIC 820P K 50V
C705	403 075 4219	CERAMIC 820P K 50V
C707	403 075 4219	CERAMIC 820P K 50V
★ C708	403 175 3419	CERAMIC 1000P P 2K
	403 077 2807	CERAMIC 1000P Z 2K
C721	403 041 8804	ELECT 10U M 16V
C801	403 069 9510	CERAMIC 0.01U Z 50V
C806	403 039 3507	ELECT 470U M 6.3V
C811	403 049 0008	ELECT 1U M 50V
C822	403 041 8804	ELECT 10U M 16V
C829	403 049 0008	ELECT 1U M 50V
C831	403 076 5314	CERAMIC 680P K 500V
C832	403 062 0504	POLYESTER 0.047U K 50V
	403 312 2203	POLYESTER 0.047U K 50V
C835	403 069 9510	CERAMIC 0.01U Z 50V
C836	403 069 9510	CERAMIC 0.01U Z 50V
C841	403 069 9510	CERAMIC 0.01U Z 50V
C842	403 069 9510	CERAMIC 0.01U Z 50V
C843	403 069 9510	CERAMIC 0.01U Z 50V
C853	403 047 8402	ELECT 0.1U M 50V
C854	403 074 6610	CERAMIC 560P K 50V
C856	403 049 0008	ELECT 1U M 50V
C857	403 018 7413	CERAMIC 220P J 50V
C858	403 069 1712	CERAMIC 1000P K 50V
C862	403 069 9510	CERAMIC 0.01U Z 50V

Schematic Location	Part No.	Description
C1000	403 069 9510	CERAMIC 0.01U Z 50V
C1001	403 041 8804	ELECT 10U M 16V
C1051	403 042 7707	ELECT 22U M 16V
C1052	403 069 9510	CERAMIC 0.01U Z 50V
C1059	403 041 8804	ELECT 10U M 16V
C1071	403 069 9510	CERAMIC 0.01U Z 50V
C1080	403 070 2616	CERAMIC 0.1U Z 50V
C1081	403 041 8804	ELECT 10U M 16V
C1902	403 041 8804	ELECT 10U M 16V
C3400	403 069 9510	CERAMIC 0.01U Z 50V
C3401	403 044 1703	ELECT 470U M 16V
C3402	403 042 7707	ELECT 22U M 16V
C3403	403 070 2616	CERAMIC 0.1U Z 50V
C3404	403 050 6600	ELECT 3.3U M 50V
C3406	403 166 1605	NP-ELECT 4.7U M 25V
C3407	403 049 9803	ELECT 2.2U M 50V
C3408	403 074 3114	CERAMIC 0.047U Z 50V
C3409	403 048 6308	ELECT 0.47U M 50V
C3410	403 070 2616	CERAMIC 0.1U Z 50V
C3411	403 047 8402	ELECT 0.1U M 50V
C3412	403 342 9213	TA-SOLID 3.3U K 10V
C3413	403 049 0008	ELECT 1U M 50V
C3414	403 299 1820	TA-SOLID 10U K 10V
C3416	403 049 0008	ELECT 1U M 50V
C3417	403 049 0008	ELECT 1U M 50V
C3418	403 051 0607	ELECT 4.7U M 50V
C3419	403 049 0008	ELECT 1U M 50V
C3423	403 072 1617	CERAMIC 0.022U K 50V
C3424	403 049 9803	ELECT 2.2U M 50V
C3426	403 071 8112	CERAMIC 2200P K 50V
C3427	403 070 2616	CERAMIC 0.1U Z 50V
C3428	403 049 9803	ELECT 2.2U M 50V
C3429	403 071 8112	CERAMIC 2200P K 50V
C3431	403 070 2616	CERAMIC 0.1U Z 50V
C3435	403 049 0008	ELECT 1U M 50V
C3437	403 049 0008	ELECT 1U M 50V
C3439	403 049 0008	ELECT 1U M 50V
C3440	403 075 0716	CERAMIC 6800P K 50V
C3446	403 046 9905	ELECT 4.7U M 25V
C3448	403 046 9905	ELECT 4.7U M 25V
DIODES		
D101	407 100 0204	ZENER DIODE MTZJ36A (36V)
	407 056 2307	ZENER DIODE RD36EB1 (36V)
D103	407 056 8903	ZENER DIODE RD5.1FB2 (5.1V)
	407 056 9009	ZENER DIODE RD5.1FB3 (5.1V)
D311	407 099 5006	ZENER DIODE MTZJ4.7A (4.7V)
	407 056 7906	ZENER DIODE RD5.1EB1 (5.1V)
D312	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D351	407 099 6607	ZENER DIODE MTZJ12B (12V)
	407 063 8408	ZENER DIODE MTZJ12C (12V)
	407 054 3207	ZENER DIODE RD12EB2 (12V)
	407 054 3306	ZENER DIODE RD12EB3 (12V)
D406	407 006 4108	DIODE ERB44-04

Schematic Location	Part No.	Description
D407	407 095 8001	DIODE ERD07-15L
★ D421	407 158 1307	ZENER DIODE HZ11B2L (11V)
★ D422	407 158 1307	ZENER DIODE HZ11B2L (11V)
D428	407 099 7109	ZENER DIODE MTZJ15C (15V)
	407 054 5904	ZENER DIODE RD15EB3 (15V)
D429	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D463	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 6508	DIODE 1S2471
D481	407 124 6404	DIODE ERA18-04
	407 007 6606	DIODE ES1
	407 124 5506	DIODE RMPG06G
D482	407 011 4407	DIODE TVR1G
D483	407 124 6404	DIODE ERA18-04
	407 007 6606	DIODE ES1
	407 124 5506	DIODE RMPG06G
D486	407 099 6102	ZENER DIODE MTZJ10B (10V)
	407 054 0008	ZENER DIODE RD10EB2 (10V)
D487	407 005 8602	DIODE ERA15-02
	407 088 6502	DIODE MPG06D
	407 011 3004	DIODE S5277B
	408 009 9404	DIODE 1N4002ID
D489	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D493	407 063 9306	ZENER DIODE MTZJ7.5C (7.5V)
	407 057 6502	ZENER DIODE RD7.5EB3 (7.5V)
D501	407 005 8602	DIODE ERA15-02
	407 088 6502	DIODE MPG06D
	407 011 3004	DIODE S5277B
	408 009 9404	DIODE 1N4002ID
D503	407 100 0204	ZENER DIODE MTZJ36A (36V)
	407 056 2307	ZENER DIODE RD36EB1 (36V)
★ D601	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
★ D602	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
★ D603	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
★ D604	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
D609	407 124 6503	DIODE ERA18-02
	407 007 6903	DIODE ES1Z
	407 124 5605	DIODE RMPG06D
	408 009 9008	DIODE BYD33D
D610	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 6508	DIODE 1S2471

Schematic Location	Part No.	Description
D611	407 099 5808	ZENER DIODE MTZJ7.5A (7.5V)
★ D612	407 057 6304	ZENER DIODE RD7.5EB1 (7.5V)
	407 147 5705	PHOTO COUPLE ON3131S
	407 104 2402	PHOTO COUPLE PC817C
	407 106 6101	PHOTO COUPLE PC817D
	407 175 9904	PHOTO COUPLE TLP621-1-BL
D614	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 6508	DIODE 1S2471
★ D621	407 007 7603	DIODE EU2
★ D624	407 129 6706	DIODE RU4YX LF-L1
★ D625	407 129 7000	DIODE RU4AM LF-L1
D627	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D629	407 099 7208	ZENER DIODE MTZJ16A (16V)
	407 054 7007	ZENER DIODE RD16EB1 (16V)
D680	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D683	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D687	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D693	407 099 5402	ZENER DIODE MTZJ6.2B (6.2V)
	407 057 2702	ZENER DIODE RD6.2EB2 (6.2V)
D694	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D721	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D722	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D801	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D831	407 065 1308	ZENER DIODE MTZJ3.6B (3.6V)
	407 056 4707	ZENER DIODE RD4.3EB2 (4.3V)
D834	407 099 8007	ZENER DIODE MTZJ20C (20V)

Schematic Location	Part No.	Description
	407 055 1905	ZENER DIODE RD20EB3 (20V)
D836	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D843	407 005 4505	DIODE DS442X
	408 008 2406	DIODE 1N4148
	407 012 4406	DIODE 1SS133
	407 013 4207	DIODE 1S2076
	407 013 7109	DIODE 1S2473
D1001	407 099 6102	ZENER DIODE MTZJ10B (10V)
	407 054 0008	ZENER DIODE RD10EB2 (10V)
D1008	407 065 1308	ZENER DIODE MTZJ3.6B (3.6V)
	407 056 4707	ZENER DIODE RD4.3EB2 (4.3V)
D1009	407 065 1308	ZENER DIODE MTZJ3.6B (3.6V)
	407 056 4707	ZENER DIODE RD4.3EB2 (4.3V)
D1051	407 099 6102	ZENER DIODE MTZJ10B (10V)
	407 054 0008	ZENER DIODE RD10EB2 (10V)
D1052	407 099 6102	ZENER DIODE MTZJ10B (10V)
	407 054 0008	ZENER DIODE RD10EB2 (10V)
D1059	407 063 9306	ZENER DIODE MTZJ7.5C (7.5V)
	407 057 6502	ZENER DIODE RD7.5EB3 (7.5V)
D1901	407 063 9306	ZENER DIODE MTZJ7.5C (7.5V)
	407 057 6502	ZENER DIODE RD7.5EB3 (7.5V)

INTEGRATED CIRCUITS

IC002	409 275 7903	IC LA4525
★ IC101	409 431 2100	IC LA76170N
IC301	409 406 1107	IC TC90A44P
★ IC501	409 340 1904	IC LA7841
★ IC601	409 172 8102	IC SE130NH
IC681	409 241 8309	IC TA78L05S
	409 066 7303	IC UPC78L05J
IC801	410 324 5306	IC M37272M8-XXXSP
IC802	409 376 1503	IC ST24C02B6
	409 333 3700	IC 24LC02B/P
IC1081	409 051 3006	IC TC4053BP
IC3401	409 432 7807	IC UPC1851BCU

COILS

★ LF601	645 012 0589	LINE FILTER
	645 026 8274	LINE FILTER
L164	645 003 9713	INDUCTOR, 15U K
	645 016 2657	INDUCTOR, 15U K
L166	645 003 9812	INDUCTOR, 33U K
	645 016 2985	INDUCTOR, 33U K
L305	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L306	645 003 9782	INDUCTOR, 22U K
	645 016 2831	INDUCTOR, 22U K
L309	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L310	610 078 5946	PIPE CORE
L312	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L332	645 003 9713	INDUCTOR, 15U K

Schematic Location	Part No.	Description
L341	645 016 2657	INDUCTOR, 15U K
	645 008 2924	INDUCTOR, 8.2U K
	645 016 3227	INDUCTOR, 8.2U K
L401	645 017 7675	INDUCTOR, 3.3U,FILTER
L402	610 031 9998	PIPE CORE
L403	610 078 6820	PIPE CORE
★ L413	645 025 4406	COIL, LINEARITY
	645 029 8035	COIL, LINEARITY
L414	610 031 1367	INDUCTOR 202J
	610 211 3488	INDUCTOR
L416	645 013 8676	INDUCTOR, 350U
L601	610 078 6820	PIPE CORE
L621	610 078 5946	PIPE CORE
L623	610 078 5946	PIPE CORE
L625	610 078 5946	PIPE CORE
L800	610 078 5946	PIPE CORE
L801	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L813	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L814	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L821	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L851	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L863	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L881	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L882	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
★ L901	645 030 7430	COIL, DEGAUSSING
L1901	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
TRANSISTORS		
Q001	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 008 4805	TR 2SB764-E
Q005	405 008 4904	TR 2SB764-F
Q135	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
Q202	405 011 8401	TR 2SC1740S-Q

Schematic Location	Part No.	Description
Q216	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
Q222	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
Q225	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
Q226	405 004 3208	TR 2SA564A-R(CU)
	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
Q301	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
Q306	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	406 000 6804	TR 2SA1015-GR(SAN)
	406 000 6804	TR 2SA1015-GR(SAN)
Q307	406 000 6804	TR 2SA1015-GR(SAN)

Schematic Location	Part No.	Description
Q307 (Cont.)	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
Q332	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 006 1707	TR 2SA933S-Q
Q341	405 006 1806	TR 2SA933S-R
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
Q342	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
Q343	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
Q371	405 020 7907	TR 2SC945A-RA
	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
Q372	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
Q401	405 004 3208	TR 2SA564A-R(CU)
	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
	405 013 6207	TR 2SC2271-D-CTV
	405 013 6306	TR 2SC2271-E-CTV
★ Q402	405 082 2407	TR 2SD1879-CTV-YB
Q461	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R

Schematic Location	Part No.	Description	
Q462	405 011 8609	TR 2SC1740S-S	
	405 012 2002	TR 2SC1815-GR	
	405 012 2309	TR 2SC1815-Y	
	405 020 7501	TR 2SC945A-PA	
	405 020 7709	TR 2SC945A-QA	
	405 064 7307	TR 2SB1274-Q-RA	
Q486	405 064 7406	TR 2SB1274-R-RA	
	405 023 5009	TR 2SD400-E-MP	
★ Q601	405 023 5306	TR 2SD400-F-MP	
	405 095 9004	TR 2SC4423-CTV	
Q604	405 058 0208	TR 2SC3807-R-CTV-YA	
Q605	406 000 6804	TR 2SA1015-GR(SAN)	
	405 001 7407	TR 2SA1015-O(SAN)	
Q627	405 001 7605	TR 2SA1015-Y(SAN)	
	405 004 3109	TR 2SA564A-Q(CU)	
	405 004 3208	TR 2SA564A-R(CU)	
	405 006 1707	TR 2SA933S-Q	
	405 006 1806	TR 2SA933S-R	
	405 089 0000	TR 2SA1707-S	
	405 089 0109	TR 2SA1707-T	
	405 009 6907	TR 2SB985-S	
	405 009 7003	TR 2SB985-T	
	Q635	405 011 8401	TR 2SC1740S-Q
		405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S	
	405 012 2002	TR 2SC1815-GR	
	405 012 2101	TR 2SC1815-O	
	405 012 2309	TR 2SC1815-Y	
	405 020 7501	TR 2SC945A-PA	
	405 020 7709	TR 2SC945A-QA	
	405 020 7907	TR 2SC945A-RA	
	Q681	405 011 8401	TR 2SC1740S-Q
		405 011 8500	TR 2SC1740S-R
Q688	405 011 8609	TR 2SC1740S-S	
	405 012 2002	TR 2SC1815-GR	
	405 012 2101	TR 2SC1815-O	
	405 012 2309	TR 2SC1815-Y	
	405 020 7501	TR 2SC945A-PA	
	405 020 7709	TR 2SC945A-QA	
	405 020 7907	TR 2SC945A-RA	
	406 000 6804	TR 2SA1015-GR(SAN)	
	405 001 7605	TR 2SA1015-Y(SAN)	
	405 004 3208	TR 2SA564A-R(CU)	
	405 006 1806	TR 2SA933S-R	
	Q693	405 011 8401	TR 2SC1740S-Q
		405 011 8500	TR 2SC1740S-R
	Q695	405 011 8609	TR 2SC1740S-S
		405 012 2002	TR 2SC1815-GR
		405 012 2101	TR 2SC1815-O
		405 012 2309	TR 2SC1815-Y
		405 020 7501	TR 2SC945A-PA
		405 020 7709	TR 2SC945A-QA
		405 020 7907	TR 2SC945A-RA
405 001 7605		TR 2SA1015-Y(SAN)	
405 004 3208		TR 2SA564A-R(CU)	
405 004 4809		TR 2SA608-F-CTV-NP	
Q701		406 000 3605	TR 2SC3620(LB-SAN-1)
		405 066 4304	TR 2SC2621-C-RA
		405 041 6507	TR 2SC2621-D-RA

Schematic Location	Part No.	Description
Q703	405 041 6705	TR 2SC2621-E-RA
	405 066 9903	TR 2SC2688(1)-K
	405 067 0008	TR 2SC2688(1)-L
	405 067 0107	TR 2SC2688(1)-M
	406 000 3605	TR 2SC3620(LB-SAN-1)
	405 066 4304	TR 2SC2621-C-RA
Q705	405 041 6507	TR 2SC2621-D-RA
	405 041 6705	TR 2SC2621-E-RA
	405 066 9903	TR 2SC2688(1)-K
	405 067 0008	TR 2SC2688(1)-L
	405 067 0107	TR 2SC2688(1)-M
	406 000 3605	TR 2SC3620(LB-SAN-1)
Q721	405 066 4304	TR 2SC2621-C-RA
	405 041 6507	TR 2SC2621-D-RA
	405 041 6705	TR 2SC2621-E-RA
	405 066 9903	TR 2SC2688(1)-K
	405 067 0008	TR 2SC2688(1)-L
	405 067 0107	TR 2SC2688(1)-M
Q831	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 006 1707	TR 2SA933S-Q
Q881	405 006 1806	TR 2SA933S-R
	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
Q882	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
Q1071	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA

Schematic Location	Part No.	Description
<p>RESISTORS</p> <p>NOTES: Read description of the Resistor as follows:</p> <p>(Example) CARBON 4.7K J A 1/4W └──────────┴──┴──┴──┬──┘ └──┘ Rated Wattage └──┘ Performance Symbols: A...General B...Non-flammable Z...Low noise Other...Temperature coeffi- └──┘ Tolerance Symbols: A...0.05% B...0.1% C...0.25% D...0.5% F...1% G...2% J...5% K...10% M...20% P...+5 -15% └──┘ Rated Value, ohms: K...1,000 M...1,000,000</p> <p>Material: CARBONCarbon MT-FILMMetal Film OXIDE-MTOxide Metal Film SOLIDComposition MT-GLAZEMetal Glaze WIRE WOUND ...Wire Wound CERAMIC RES ...Ceramic FUSIBLE RES ...Fusible</p>		
R001	401 039 0413	MT-GLAZE 8.2K JA 1/10W
R002	401 039 0413	MT-GLAZE 8.2K JA 1/10W
R003	401 037 9210	MT-GLAZE 1.8K JA 1/10W
R004	401 037 9210	MT-GLAZE 1.8K JA 1/10W
R005	401 037 5618	MT-GLAZE 10K JA 1/10W
R006	401 023 1706	CARBON 820 JA 1/4W
R012	401 027 2600	CARBON 5.6K JA 1/6W
★ R101	401 061 1706	OXIDE-MT 33 JA 1W
R106	401 009 2000	CARBON 27K JA 1/2W
R133	401 037 6714	MT-GLAZE 1.2K JA 1/10W
R136	401 025 4200	CARBON 1.8K JA 1/6W
R137	401 038 9011	MT-GLAZE 680 JA 1/10W
R138	401 037 5212	MT-GLAZE 100 JA 1/10W
R142	401 038 3712	MT-GLAZE 33K JA 1/10W
R143	401 037 5410	MT-GLAZE 1K JA 1/10W
R151	401 025 1308	CARBON 150 JA 1/6W
R159	401 025 7409	CARBON 220 JA 1/6W
R161	401 037 9418	MT-GLAZE 180K JA 1/10W
R162	401 038 0919	MT-GLAZE 220K JA 1/10W
R163	401 037 7810	MT-GLAZE 150 JA 1/10W
R164	401 024 7004	CARBON 1K JA 1/6W
R167	401 025 2305	CARBON 150K JA 1/6W
R168	401 038 2319	MT-GLAZE 270K JA 1/10W
R169	401 037 5410	MT-GLAZE 1K JA 1/10W
R202	401 024 7004	CARBON 1K JA 1/6W
R207	401 037 5410	MT-GLAZE 1K JA 1/10W

Schematic Location	Part No.	Description
R212	401 037 5816	MT-GLAZE 1M JA 1/10W
R216	401 037 5618	MT-GLAZE 10K JA 1/10W
R217	401 027 5908	CARBON 68K JA 1/6W
R221	401 037 5212	MT-GLAZE 100 JA 1/10W
R222	401 037 5410	MT-GLAZE 1K JA 1/10W
R223	401 038 0711	MT-GLAZE 2.2K JA 1/10W
R224	401 037 5410	MT-GLAZE 1K JA 1/10W
R225	401 037 5410	MT-GLAZE 1K JA 1/10W
R226	401 037 5410	MT-GLAZE 1K JA 1/10W
R251	401 038 9219	MT-GLAZE 6.8K JA 1/10W
R252	401 038 2111	MT-GLAZE 2.7K JA 1/10W
R271	401 038 0810	MT-GLAZE 22K JA 1/10W
R272	401 038 3613	MT-GLAZE 3.3K JA 1/10W
R273	401 037 5618	MT-GLAZE 10K JA 1/10W
R276	401 037 6813	MT-GLAZE 12K JA 1/10W
R281	401 038 3613	MT-GLAZE 3.3K JA 1/10W
R287	401 037 9111	MT-GLAZE 180 JA 1/10W
R288	401 037 9111	MT-GLAZE 180 JA 1/10W
R289	401 037 9111	MT-GLAZE 180 JA 1/10W
R301	401 037 5410	MT-GLAZE 1K JA 1/10W
R302	401 037 7919	MT-GLAZE 1.5K JA 1/10W
R303	401 038 7710	MT-GLAZE 5.6K JA 1/10W
R305	401 037 5212	MT-GLAZE 100 JA 1/10W
R306	401 024 7004	CARBON 1K JA 1/6W
R307	401 037 7919	MT-GLAZE 1.5K JA 1/10W
R308	401 037 5410	MT-GLAZE 1K JA 1/10W
R309	401 027 5205	CARBON 680 JA 1/6W
★ R310	401 010 2501	CARBON 47 JA 1/2W
★ R311	401 010 2501	CARBON 47 JA 1/2W
R312	401 039 0314	MT-GLAZE 820 JA 1/10W
R332	401 038 9011	MT-GLAZE 680 JA 1/10W
R333	401 037 7919	MT-GLAZE 1.5K JA 1/10W
R334	401 024 7004	CARBON 1K JA 1/6W
R341	401 024 7004	CARBON 1K JA 1/6W
R342	401 024 7004	CARBON 1K JA 1/6W
R343	401 038 0711	MT-GLAZE 2.2K JA 1/10W
R347	401 037 5618	MT-GLAZE 10K JA 1/10W
R348	401 037 5618	MT-GLAZE 10K JA 1/10W
R349	401 024 7004	CARBON 1K JA 1/6W
R351	401 026 9600	CARBON 470 JA 1/6W
R352	401 038 2319	MT-GLAZE 270K JA 1/10W
R353	401 024 7400	CARBON 10K JA 1/6W
R371	401 037 5618	MT-GLAZE 10K JA 1/10W
R372	401 038 3712	MT-GLAZE 33K JA 1/10W
R373	401 038 9417	MT-GLAZE 680K JA 1/10W
R376	401 038 7819	MT-GLAZE 56K JA 1/10W
R377	401 038 7710	MT-GLAZE 5.6K JA 1/10W
R400	401 038 3811	MT-GLAZE 330K JA 1/10W
R401	401 017 0807	CARBON 270 JA 1/4W
R403	401 038 2111	MT-GLAZE 2.7K JA 1/10W
R404	401 026 3905	CARBON 330 JA 1/6W
R406	401 010 8305	CARBON 5.6K JA 1/2W
★ R407	401 068 4700	OXIDE-MT 4.7K JA 2W
★ R413	402 067 3305	WIRE WOUND 4.7 KA 5W
	402 075 5704	WIRE WOUND 4.7 KA 5W
★ R418	401 009 1607	CARBON 2.7K JB 1/2W
★ R421	401 148 7201	MT-FILM 1.8K FA 1/6W
★ R422	401 052 6802	MT-FILM 10K FA 1/6W
★ R423	401 053 2605	MT-FILM 3.3K FA 1/6W

Schematic Location	Part No.	Description
R426	401 038 9011	MT-GLAZE 680 JA 1/10W
R428	401 025 1902	CARBON 15K JA 1/6W
R460	401 026 9303	CARBON 47 JA 1/6W
R461	401 026 0607	CARBON 270 JA 1/6W
R467	401 010 8305	CARBON 5.6K JA 1/2W
R468	401 027 5205	CARBON 680 JA 1/6W
R471	401 027 5205	CARBON 680 JA 1/6W
R473	401 027 3003	CARBON 56K JA 1/6W
R474	401 025 4903	CARBON 180K JA 1/6W
R475	401 027 5205	CARBON 680 JA 1/6W
★ R481	401 009 4905	CARBON 33 JB 1/2W
★ R482	401 011 9004	CARBON 1 JB 1/4W
★ R483	401 006 7701	CARBON 1 JB 1/2W
R485	401 037 9319	MT-GLAZE 18K JA 1/10W
★ R486	401 065 1801	OXIDE-MT 12 JA 2W
R487	401 026 6609	CARBON 390 JA 1/6W
★ R489	401 061 5308	OXIDE-MT 39 JA 1W
R491	401 012 5708	CARBON 1K JA 1/4W
R492	401 097 3903	MT-FILM 39K FA 1/6W
R493	401 018 5801	CARBON 330K JA 1/4W
R494	401 018 5801	CARBON 330K JA 1/4W
★ R497	401 057 9105	OXIDE-MT 1.2 JA 1W
★ R498	401 011 4306	CARBON 8.2 JA 1/2W
R503	401 027 5502	CARBON 6.8K JA 1/6W
R504	401 027 8602	CARBON 8.2K JA 1/6W
R505	401 006 8104	CARBON 1.2 JA 1/2W
R506	401 027 5205	CARBON 680 JA 1/6W
R507	401 006 7602	CARBON 1 JA 1/2W
R508	401 025 1902	CARBON 15K JA 1/6W
R509	401 026 9907	CARBON 4.7K JA 1/6W
★ R511	401 060 7402	OXIDE-MT 270 JA 1W
R517	401 025 4606	CARBON 18K JA 1/6W
R518	401 037 9319	MT-GLAZE 18K JA 1/10W
★ R601	402 064 2905	WIRE WOUND 1 KA 7W
	402 072 3000	WIRE WOUND 1 KA 7W
★ R602	402 000 0705	SOLID 3.3M KA 1/2W
R603	401 007 2309	CARBON 100K JA 1/2W
★ R606	401 068 6209	OXIDE-MT 5.6 JA 2W
★ R613	401 068 6902	OXIDE-MT 56 JA 2W
R614	401 011 1107	CARBON 68 JA 1/2W
R615	401 014 5201	CARBON 15K JA 1/4W
R616	401 026 4209	CARBON 3.3K GA 1/6W
R617	401 024 6908	CARBON 1K GA 1/6W
★ R618	401 068 6902	OXIDE-MT 56 JA 2W
R619	401 025 8208	CARBON 22K JA 1/6W
R623	401 038 7710	MT-GLAZE 5.6K JA 1/10W
R621	401 026 9907	CARBON 4.7K JA 1/6W
R622	401 026 0904	CARBON 2.7K GA 1/6W
R627	401 037 5618	MT-GLAZE 10K JA 1/10W
R628	401 013 5301	CARBON 1.2K JA 1/4W
R629	401 037 5410	MT-GLAZE 1K JA 1/10W
★ R630	401 060 5002	OXIDE-MT 22K JA 1W
R631	401 022 3107	CARBON 6.8K JA 1/4W
R632	401 037 5410	MT-GLAZE 1K JA 1/10W
R634	401 027 0309	CARBON 47K JA 1/6W
R683	401 026 9907	CARBON 4.7K JA 1/6W
R686	401 016 1508	CARBON 22 JA 1/4W
R687	401 025 8208	CARBON 22K JA 1/6W
R688	401 024 9701	CARBON 12K JA 1/6W

Schematic Location	Part No.	Description		
R691	401 024 7400	CARBON	10K JA	1/6W
R692	401 027 5908	CARBON	68K JA	1/6W
R693	401 038 7918	MT-GLAZE	560K JA	1/10W
R694	401 024 7400	CARBON	10K JA	1/6W
R695	401 038 0810	MT-GLAZE	22K JA	1/10W
R701	401 027 8107	CARBON	82 JA	1/6W
R702	401 025 1308	CARBON	150 JA	1/6W
R703	401 025 4200	CARBON	1.8K JA	1/6W
R704	401 027 8107	CARBON	82 JA	1/6W
R705	401 025 1308	CARBON	150 JA	1/6W
R706	401 025 4200	CARBON	1.8K JA	1/6W
R707	401 027 8107	CARBON	82 JA	1/6W
R708	401 025 1308	CARBON	150 JA	1/6W
R709	401 025 4200	CARBON	1.8K JA	1/6W
★ R711	401 065 4604	OXIDE-MT	12K JA	2W
★ R712	401 065 4604	OXIDE-MT	12K JA	2W
★ R713	401 065 4604	OXIDE-MT	12K JA	2W
R715	401 009 1508	CARBON	2.7K JA	1/2W
R716	401 009 1508	CARBON	2.7K JA	1/2W
R717	401 009 1508	CARBON	2.7K JA	1/2W
R722	401 027 8602	CARBON	8.2K JA	1/6W
R723	401 025 4200	CARBON	1.8K JA	1/6W
R724	401 026 9600	CARBON	470 JA	1/6W
R803	401 024 6700	CARBON	100 JA	1/6W
R804	401 024 6700	CARBON	100 JA	1/6W
R806	401 038 6416	MT-GLAZE	4.7K JA	1/10W
R807	401 037 5618	MT-GLAZE	10K JA	1/10W
R808	401 037 5618	MT-GLAZE	10K JA	1/10W
R809	401 038 6416	MT-GLAZE	4.7K JA	1/10W
R810	401 025 8208	CARBON	22K JA	1/6W
R813	401 037 5618	MT-GLAZE	10K JA	1/10W
R814	401 037 5618	MT-GLAZE	10K JA	1/10W
R816	401 038 3514	MT-GLAZE	330 JA	1/10W
R821	401 037 7919	MT-GLAZE	1.5K JA	1/10W
R822	401 025 3807	CARBON	180 JA	1/6W
R823	401 024 9701	CARBON	12K JA	1/6W
R826	401 037 7919	MT-GLAZE	1.5K JA	1/10W
R827	401 027 2600	CARBON	5.6K JA	1/6W
R828	401 026 4605	CARBON	33K JA	1/6W
R831	401 037 5717	MT-GLAZE	100K JA	1/10W
R833	401 024 7400	CARBON	10K JA	1/6W
R835	401 026 1000	CARBON	2.7K JA	1/6W
R842	401 027 2303	CARBON	560 JA	1/6W
R843	401 027 2303	CARBON	560 JA	1/6W
R844	401 027 2303	CARBON	560 JA	1/6W
R846	401 037 5410	MT-GLAZE	1K JA	1/10W
R847	401 027 2600	CARBON	5.6K JA	1/6W
R848	401 027 2600	CARBON	5.6K JA	1/6W
R849	401 027 2600	CARBON	5.6K JA	1/6W
R851	401 037 5410	MT-GLAZE	1K JA	1/10W
R852	401 038 5310	MT-GLAZE	39K JA	1/10W
R853	401 037 5816	MT-GLAZE	1M JA	1/10W
R854	401 038 6317	MT-GLAZE	470 JA	1/10W
R856	401 024 6700	CARBON	100 JA	1/6W
R857	401 024 6700	CARBON	100 JA	1/6W
R859	401 037 5618	MT-GLAZE	10K JA	1/10W
R862	401 024 6700	CARBON	100 JA	1/6W
R864	401 038 5310	MT-GLAZE	39K JA	1/10W
R881	401 037 5212	MT-GLAZE	100 JA	1/10W

Schematic Location	Part No.	Description		
R882	401 037 5212	MT-GLAZE	100 JA	1/10W
R883	401 024 6700	CARBON	100 JA	1/6W
R884	401 024 6700	CARBON	100 JA	1/6W
R886	401 024 7400	CARBON	10K JA	1/6W
R1001	401 027 6608	CARBON	75 JA	1/6W
R1051	401 027 6608	CARBON	75 JA	1/6W
R1052	401 027 6608	CARBON	75 JA	1/6W
R1053	401 037 5618	MT-GLAZE	10K JA	1/10W
R1054	401 038 2210	MT-GLAZE	27K JA	1/10W
R1059	401 024 7004	CARBON	1K JA	1/6W
R1071	401 026 6609	CARBON	390 JA	1/6W
R1081	401 038 0810	MT-GLAZE	22K JA	1/10W
R1082	401 038 0810	MT-GLAZE	22K JA	1/10W
R1091	401 037 6813	MT-GLAZE	12K JA	1/10W
R1092	401 038 2210	MT-GLAZE	27K JA	1/10W
R1901	401 024 7400	CARBON	10K JA	1/6W
R1902	401 024 7004	CARBON	1K JA	1/6W
R1903	401 037 9210	MT-GLAZE	1.8K JA	1/10W
R1904	401 038 0711	MT-GLAZE	2.2K JA	1/10W
R1905	401 038 5112	MT-GLAZE	3.9K JA	1/10W
R1906	401 038 7710	MT-GLAZE	5.6K JA	1/10W
R1907	401 037 6813	MT-GLAZE	12K JA	1/10W
R1909	401 024 7004	CARBON	1K JA	1/6W
R1910	401 024 7004	CARBON	1K JA	1/6W
R3401	401 037 5410	MT-GLAZE	1K JA	1/10W
R3402	401 038 9318	MT-GLAZE	68K JA	1/10W
R3403	401 037 7919	MT-GLAZE	1.5K JA	1/10W
R3404	401 037 7919	MT-GLAZE	1.5K JA	1/10W
R3405	401 037 5212	MT-GLAZE	100 JA	1/10W
R3406	401 256 8008	MT-FILM	16.5K FD	1/6W
R3407	401 038 3613	MT-GLAZE	3.3K JA	1/10W
R3408	401 037 9210	MT-GLAZE	1.8K JA	1/10W
R3421	401 024 6700	CARBON	100 JA	1/6W
R3422	401 024 6700	CARBON	100 JA	1/6W
R3431	401 -38 7611	MT-GLAZE	560 JA	1/10W
R3432	401 -38 7611	MT-GLAZE	560 JA	1/10W
R3435	401 037 5717	MT-GLAZE	100K JA	1/10W
R3437	401 037 5717	MT-GLAZE	100K JA	1/10W
R3440	401 037 7919	MT-GLAZE	1.5K JA	1/10W
R3445	401 038 3811	MT-GLAZE	330K JA	1/10W
R3446	401 037 5212	MT-GLAZE	100 JA	1/10W
R3447	401 038 3811	MT-GLAZE	330K JA	1/10W
R3448	401 037 5212	MT-GLAZE	100 JA	1/10W

SWITCHES

SW1901	645 027 7382	SWITCH, PUSH (POWER)
SW1902	645 027 7382	SWITCH, PUSH (VOL+)
SW1903	645 027 7382	SWITCH, PUSH (VOL-)
SW1904	645 027 7382	SWITCH, PUSH (CH+)
SW1905	645 027 7382	SWITCH, PUSH (CH-)
SW1906	645 027 7382	SWITCH, PUSH (MENU)

Schematic Location	Part No.	Description
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TRANSFORMERS

T131	645 027 6095	TRANS, IF 4.5MHZ
T151	645 027 6088	TRANS, OSC 45.75MHZ
T401	610 000 1138	DRIVE TRANS
	610 223 1663	DRIVE TRANS
★ T402	645 032 8978	TRANS, FLYBACK
	645 018 9579	TRANS, FLYBACK
★ T601	645 032 5175	TRANS, POWER, PULSE

FILTERS/CRYSTALS

X141	421 006 3206	SAW F TSF5221P
X153	610 015 2946	CERAMIC FILTER 4.5MHZ
X153	645 030 1049	CERAMIC FILTER 4.5MHZ
X161	610 015 3059	TRAP, CERAMIC 4.5MHZ
X251	610 204 4195	CRYSTAL OSCILLATOR
	610 245 9746	CRYSTAL OSCILLATOR
	610 012 0655	CRYSTAL OSCILLATOR
X401	645 020 9147	OSC, CERAMIC 507.5KHZ
X801	645 000 6692	OSC, CERAMIC 8.00MHZ
	645 021 5483	OSC, CERAMIC 8.00MHZ

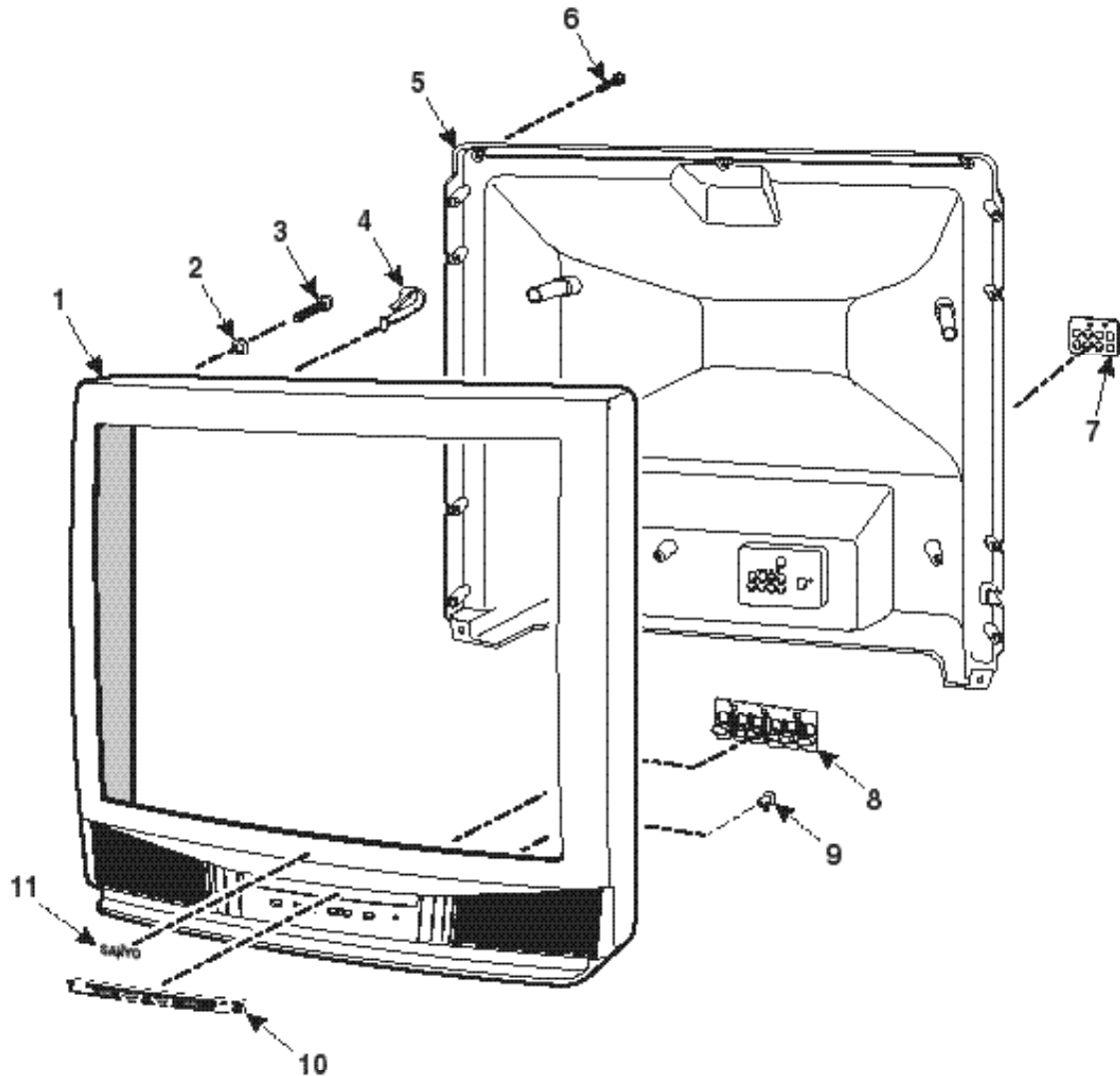
MISCELLANEOUS

A100	610 278 0888	ASSY, PWB, MAIN
★ A101	645 032 5632	TUNER, U/V
A102	610 246 9660	HOLDER ANT A-VC
A102B	610 278 8815	ANT CABLE
A700	610 275 9822	ASSY, PWB, SOCKET
A1000	610 276 0101	ASSY, PWB, AV
A1901	645 027 4213	UNIT, REMOCON RECEIVER
★ F601	423 018 8101	FUSE 125V 4A
	423 007 1601	FUSE 125V 4A

Schematic Location	Part No.	Description
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	423 007 1809	FUSE 125V 4A
F601A	645 000 5077	HOLDER, FUSE
	645 016 0479	HOLDER, FUSE
F601B	645 000 5077	HOLDER, FUSE
	645 016 0479	HOLDER, FUSE
★ K701A	645 025 6103	SOCKET, CRT 8P
K1001	645 032 1979	JACK, RCA-3
K1003	645 032 2006	JACK, RCA-2
K1051	610 010 8295	SOCKET, DIN 4P
★ PS601	408 038 5606	THERMISTOR
★ Q900	414 009 5407	CRT M78JUA068X78
	414 009 5704	CRT M78LKU30X12(W)
★ RL601	645 000 4155	RELAY (POWER ON/OFF)
	645 011 2713	RELAY
	645 024 7828	RELAY
	645 015 8629	RELAY
	645 024 7767	RELAY
SP901	645 013 6306	SPEAKER, 8
SP902	645 013 6306	SPEAKER, 8
VR461	645 003 5531	VR, SEMI, 10K N (H-WIDTH)
	645 011 6988	VR, SEMI, 10K N
	645 019 6003	VR, SEMI, 10K N
★ W601	645 034 8518	CORD ,POWER-2.0MK-
★ W900	610 264 8362	ASSY, WIRE GND CONNECTOR
	610 267 0325	GND CONNECTOR

CABINET PARTS LIST



CABINET PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	610 275 0027	CABINET FRONT ASSY
2A	610 268 9679	CRT MTG WASHER 2.5MM (2 TOP)
2B	610 268 9655	CRT MTG WASHER 2.0MM (2 BTM)
3	412 053 3905	CRT MTG SCREW 6X35 (4 USED)
OR	412 054 0002	CRT MTG SCREW 6X35 (4 USED)
4	610 102 7151	DC HOLDER (4 USED)
5	610 275 2472	CABINET BACK
6	412 036 1805	SCREW 4X14 (12 USED)
OR	411 078 1101	SCREW 4X14 (12 USED)
7	610 276 6363	DEC AV SHEET
8	610 275 4049	BUTTON UNIT
9	610 265 3786	CAP RC
10	610 276 6349	DEC SHEET
11	610 236 9274	SANYO BADGE

ACCESSORY PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
	610 276 2228	OWNER'S MANUAL
	645 034 8129	RC TRANSMITTER
	610 278 3186	RC BATTERY COVER

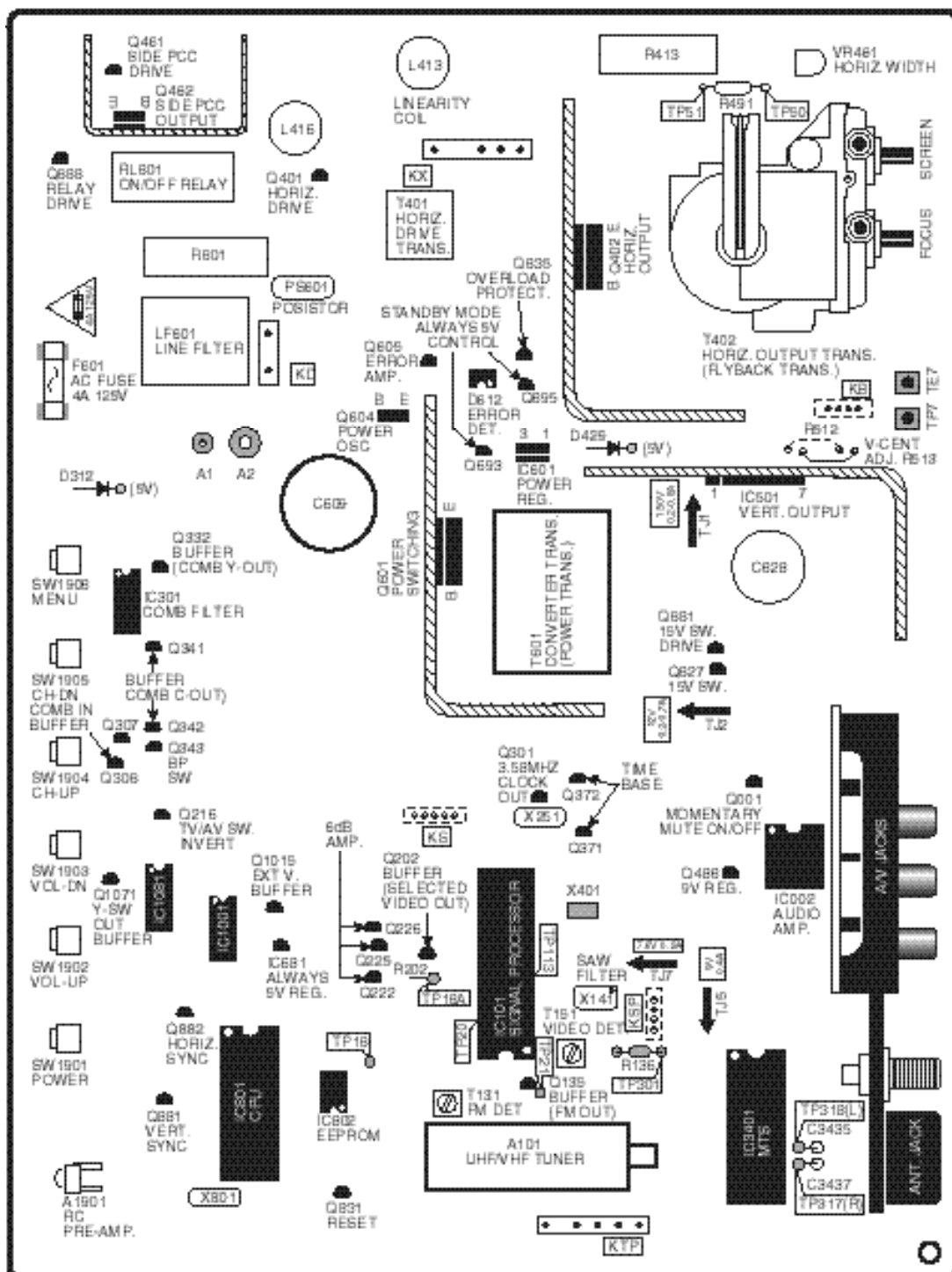
COMPONENT AND TESTPOINT LOCATIONS

CAUTION

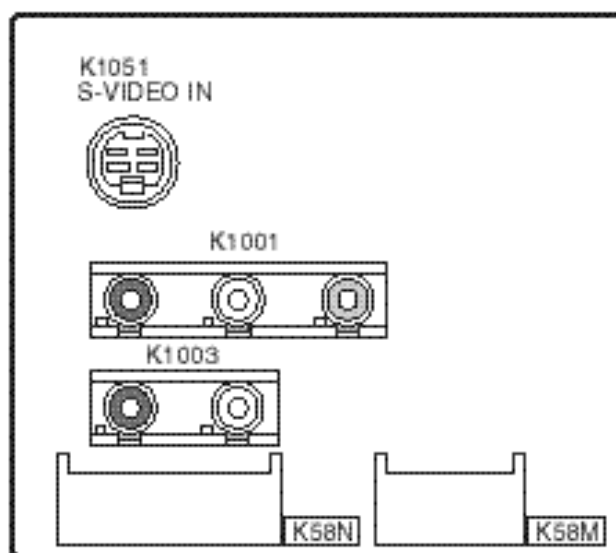


**FOR CONTINUED PROTECTION AGAINST
A RISK OF FIRE, REPLACE ONLY WITH THE
SAME TYPE 4A, 125V FUSE.**

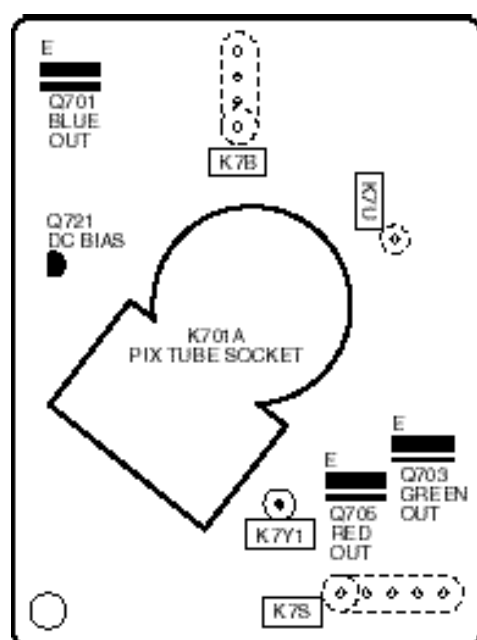
MAIN BOARD



A/V BOARD



PICTURE TUBE SOCKET BOARD




For parts or service contact
SANYO FISHER SERVICE
1411 West 190th Street, Suite 800
South Bay Corporate Center, Gardena, CA 90248

May / '99 /2000 SMC

Printed in U.S.A.

SCHEMATIC DIAGRAMS

NOTES ON SCHEMATIC DIAGRAMS

1. All resistance values in ohms K=1,000 M=1,000,000.
2. Unless otherwise noted on schematic, all capacitor values less than 1 are expressed in μF (Micro Farad), and the values more than 1 are in pF.
3. Unless otherwise noted on schematic, voltage reading taken with VOM from point indicated to chassis ground. Voltage reading taken using color-bar signal VHF channel 5, all controls at normal. Line voltage at 120 volts. Some voltages may vary with signal strength.
4. Waveforms were taken with color-bar signal and controls adjusted for normal picture. Waveforms marked with an * may vary with signal strength.
5. The Symbol  indicates a fusible resistor, which protects the circuit from possible short circuits.

SERVICE NOTES:

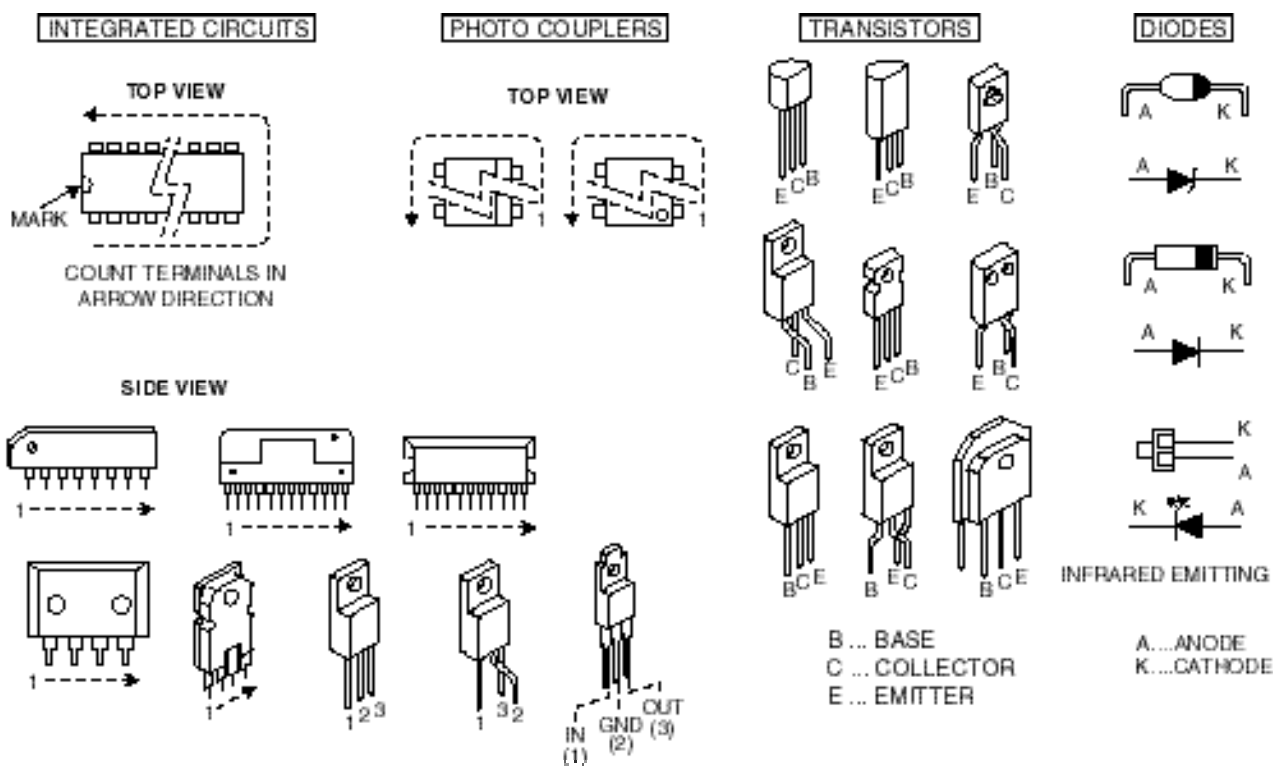
1. When replacing parts on circuit boards, clamp the lead wires to terminals before soldering.
2. When replacing high wattage resistors on circuit board, keep the resistor body 10 mm (3/8) from circuit board.
3. Keep wires away from high voltage and high temperature components.

PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A STAR (★) ON THIS SCHEMATIC DIAGRAM DESIGNATE COMPONENTS WHOSE VALUES ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A STAR NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST. DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

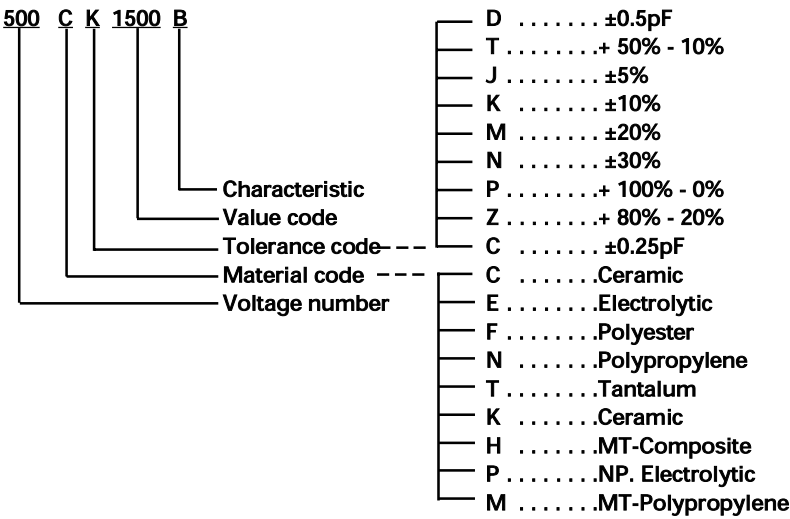
X-RADIATION WARNING NOTE

THIS TV CONTAINS CRITICAL PARTS TO PROTECT AGAINST X-RADIATION. NOMINAL 2ND ANODE VOLTAGE IS 30.0KV AT ZERO BEAM CURRENT AT 120 VOLTS AC LINE, AND MUST NOT EXCEED 31.0KV UNDER ANY OPERATING CONDITION. SEE HIGH VOLTAGE CHECK ON PAGE 7.

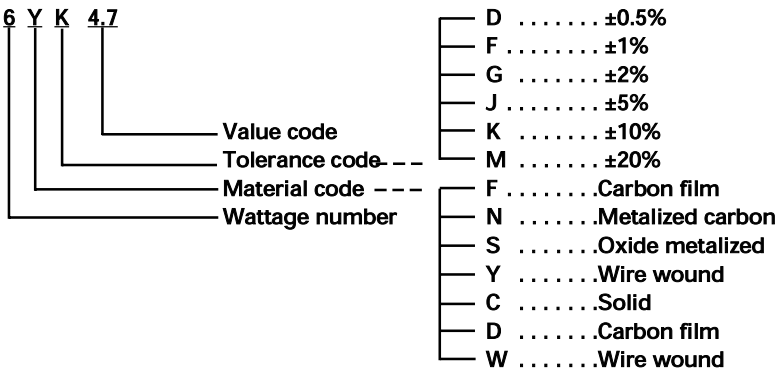


CAPACITOR AND RESISTOR CODE CHART

CAPACITOR (Example)



RESISTOR (Example)



MODEL DS31590

Chassis No. 31590-00

— 21 —

— 22 —

— 23 —

— 24 —

— 25 —

— 26 —

— 27 —

— 28 —

— 29 —

— 30 —

— 31 —

— 32 —

VOLTAGE CHARTS

NOTE: Voltages were measured using color bar signal and the controls adjusted for normal picture.

Device/Pin #	Volts/Mode	
D612-1	POWER ON: 31.4	POWER OFF: N/A
D612-2	POWER ON: 30.4	POWER OFF: N/A
D612-3	POWER ON: -3	POWER OFF: 0.6
D612-4	POWER ON: 5.2	POWER OFF: 1.1
IC002-1	GND	
IC002-2	1.4	
IC002-3	1.4	
IC002-4	N.C.	
IC002-5	GND	
IC002-6	7.7	
IC002-7	15.9	
IC002-8	7.7	
IC101-1	1.6	
IC101-2	6.8	
IC101-3	6.8	
IC101-4	7.6	
IC101-5	3.9	
IC101-6	3.9	
IC101-7	3.4	
IC101-8	1.3	
IC101-9	GND	
IC101-10	3.8	
IC101-11	3.8	
IC101-12	5.0	
IC101-13	3.4	
IC101-14	5.8	
IC101-15	4.0	
IC101-16	3.5	
IC101-17	3.8	
IC101-18	6.2	
IC101-19	4.6	
IC101-20	GND	
IC101-21	7.5	
IC101-22	5.2	
IC101-23	0.6	
IC101-24	0.8	
IC101-25	0	
IC101-26	7.6	
IC101-27	GND	
IC101-28	2.8	
IC101-29	2.7	
IC101-30	2.8	
IC101-31	4.8	
IC101-32	7.6	
IC101-33	3.5	
IC101-34	3.5	
IC101-35	3.5	

Device/Pin #	Volts/Mode	
IC101-36	0.4	
IC101-37	5.1	
IC101-38	3.5	
IC101-39	3.6	
IC101-40	3.3	
IC101-41	3.2	
IC101-42	3.8	
IC101-43	3.7	
IC101-44	3.7	
IC101-45	3.2	
IC101-46	GND	
IC101-47	3.9	
IC101-48	3.9	
IC101-49	2.5	
IC101-50	3.8	
IC101-51	N.C.	
IC101-52	4.6	
IC301-1	GND	
IC301-2	2.2	
IC301-3	2.7	
IC301-4	2.2	
IC301-5	1.6	
IC301-6	0	
IC301-7	0	
IC301-8	4.9	
IC301-9	0	
IC301-10	2.4	
IC301-11	2.2	
IC301-12	3.4	
IC301-13	3.7	
IC301-14	1.8	
IC301-15	2.7	
IC301-16	4.9	
IC501-1	GND	
IC501-2	14.4	
IC501-3	27.7	
IC501-4	3.8	
IC501-5	3.8	
IC501-6	26.9	
IC501-7	2.8	
IC601-1	GND	
IC601-2	POWER ON: 33.4	POWER OFF: N/A
IC601-3	POWER ON: 129	POWER OFF: 74.7
IC681-1 (IN)	POWER ON: 11.6	POWER OFF: 7.3
IC681-2	GND	
IC681-3 (OUT)	POWER ON: 5.0	POWER OFF: 5.0

Device/Pin #	Volts/Mode	
IC801-1	4.4	
IC801-2	4.7	
IC801-3	4.9	
IC801-4	0	
IC801-5	0	
IC801-6	0	
IC801-7	0	
IC801-8	TV: 0	AV: 4.4
IC801-9	0	
IC801-10	5.0	
IC801-11	0.2	
IC801-12	0.2	
IC801-13	0.3	
IC801-14	5.0	
IC801-15	2.1	
IC801-16	0	
IC801-17	2.0	
IC801-18	GND	
IC801-19	2.2	
IC801-20	2.0	
IC801-21	GND	
IC801-22	5.0	
IC801-23	N.C.	
IC801-24	GND	
IC801-25	5.0	
IC801-26	3.5	
IC801-27	POWER ON: 4.9	POWER OFF: 0
IC801-28	1.9	
IC801-29	2.1	
IC801-30	0	
IC801-31	4.9	
IC801-32	3.8	
IC801-33	4.9	
IC801-34	3.6	
IC801-35	5.0	
IC801-36	5.0	
IC801-37	5.0	
IC801-38	GND	
IC801-39	0.3	
IC801-40	0	
IC801-41	0	
IC801-42	0	
IC802-1	GND	
IC802-2	GND	
IC802-3	GND	
IC802-4	GND	
IC802-5	4.9	
IC802-6	4.9	
IC802-7	GND	
IC802-8	5.0	

Device/Pin #	Volts/Mode
IC1081-1	6.2
IC1081-2	1.7
IC1081-3	2.7
IC1081-4	2.6
IC1081-5	2.6
IC1081-6	GND
IC1081-7	GND
IC1081-8	GND
IC1081-9	0
IC1081-10	0
IC1081-11	0
IC1081-12	4.4
IC1081-13	6.3
IC1081-14	4.4
IC1081-15	1.7
IC1081-16	9.1
IC3401-1	9.3
IC3401-2	4.7
IC3401-3	4.7
IC3401-4	4.7
IC3401-5	4.7
IC3401-6	4.7
IC3401-7	4.6
IC3401-8	6.0
IC3401-9	2.2
IC3401-10	3.7
IC3401-11	4.7
IC3401-12	4.8
IC3401-13	5.3
IC3401-14	4.7
IC3401-15	1.3
IC3401-16	5.3
IC3401-17	4.8
IC3401-18	4.8
IC3401-19	2.3
IC3401-20	4.7
IC3401-21	GND
IC3401-22	3.7
IC3401-23	3.7
IC3401-24	GND
IC3401-25	4.7
IC3401-26	4.7
IC3401-27	4.7
IC3401-28	4.7
IC3401-29	4.7
IC3401-30	4.7
IC3401-31	4.7
IC3401-32	4.7
IC3401-33	4.7
IC3401-34	N.C.
IC3401-35	N.C.

Device/Pin #	Volts/Mode
IC3401-36	4.7
IC3401-37	4.7
IC3401-38	4.7
IC3401-39	4.7
IC3401-40	4.7
IC3401-41	4.7
IC3401-42	4.9
Q001-B	POWER ON: 0 POWER OFF: 0.7
Q001-C	POWER ON: 8.0 POWER OFF: 0
Q001-E	GND
Q005-B	15.2
Q005-C	15.9
Q005-E	15.9
Q135-B	3.6
Q135-C	7.6
Q135-E	3.0
Q202-B	3.8
Q202-C	7.6
Q202-E	3.2
Q216-B	TV:0 AV: 0.6
Q216-C	TV:0.7 AV: 0
Q216-E	GND
Q222-B	1.9
Q222-C	6.1
Q222-E	1.3
Q225-B	6.1
Q225-C	2.1
Q225-E	6.8
Q226-B	2.1
Q226-C	GND
Q226-E	2.8
Q301-B	0.6
Q301-C	4.1
Q301-E	GND
Q306-B	3.2
Q306-C	9.1
Q306-E	2.6
Q307-B	1.1
Q307-C	GND
Q307-E	1.8
Q332-B	2.1
Q332-C	GND
Q332-E	2.7
Q341-B	3.7
Q341-C	4.8
Q341-E	2.9
Q342-B	2.4
Q342-C	4.8
Q342-E	1.8

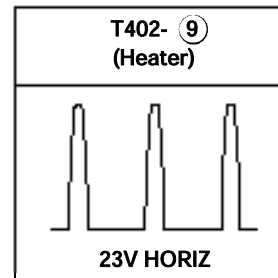
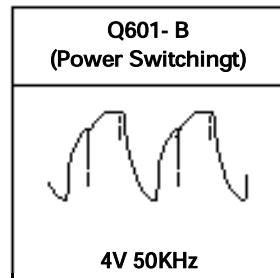
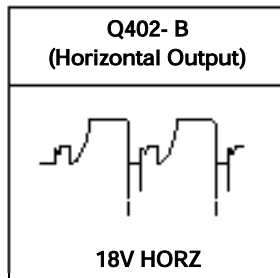
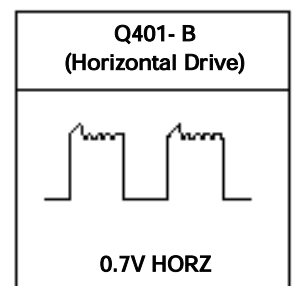
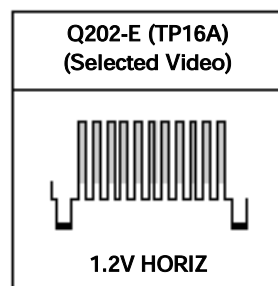
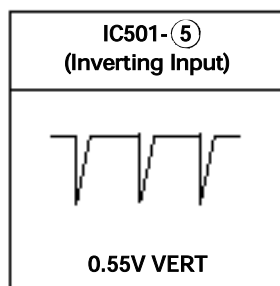
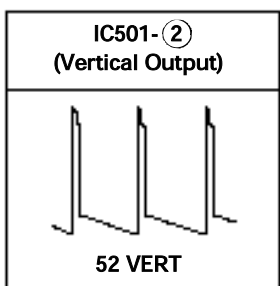
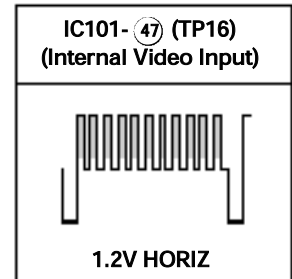
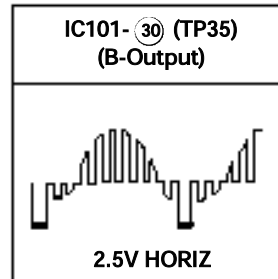
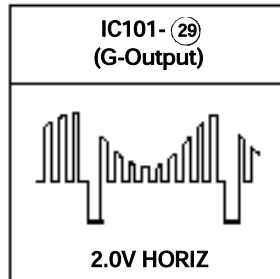
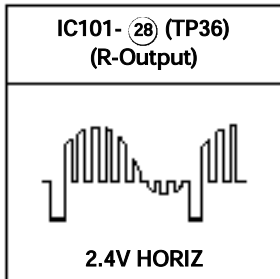
Device/Pin #	Volts/Mode
Q343-B	TV: 0.7 AV: 0
Q343-C	TV: 0 AV: 0
Q343-E	GND
Q371-B	6.1
Q371-C	GND
Q371-E	3.5
Q372-B	3.0
Q372-C	3.5
Q372-E	3.5
Q401-B	0.4
Q401-C	43.5
Q401-E	GND
Q402-B	0
Q402-C	N/A
Q402-E	0
Q461-B	0.6
Q461-C	9.2
Q461-E	GND
Q462-B	9.2
Q462-C	GND
Q462-E	9.8
Q486-B	9.9
Q486-C	10.1
Q486-E	9.1
Q601-B	POWER ON: -0.3 POWER OFF: 0
Q601-C	POWER ON: 162 POWER OFF: 172
Q601-E	GND
Q604-B	POWER ON: -1.6 POWER OFF: 0.6
Q604-C	POWER ON: -0.3 POWER OFF: 0
Q604-E	GND
Q605-B	POWER ON: 5.4 POWER OFF: 1.2
Q605-C	POWER ON: -0.3 POWER OFF: 0.6
Q605-E	POWER ON: 5.8 POWER OFF: 1.8
Q627-B	POWER ON: 10.8 POWER OFF: 7.3
Q627-C	POWER ON: 11.4 POWER OFF: 0.1
Q627-E	POWER ON: 11.6 POWER OFF: 7.3
Q635-B	POWER ON: 4.0 POWER OFF: 1.3
Q635-C	POWER ON: 30.5 POWER OFF: N/A

Device/Pin #	Volts/Mode	
Q635-E	POWER ON: 4.0	POWER OFF: 1.3
Q681-B	POWER ON: 0.7	POWER OFF: 0
Q681-C	POWER ON: 0	POWER OFF: 7.3
Q681-E	GND	
Q688-B	POWER ON: 11.4	POWER OFF: 0.1
Q688-C	POWER ON: 0	POWER OFF: 0
Q688-E	POWER ON: 11.4	POWER OFF: 0.1
Q693-B	POWER ON: 0.5	POWER OFF: 6.9
Q693-C	POWER ON: 30.4	POWER OFF: N/A
Q693-E	POWER ON: 0.4	POWER OFF: 5.7
Q695-B	POWER ON: 30.4	POWER OFF: N/A
Q695-C	GND	
Q695-E	POWER ON: 30.6	POWER OFF: N/A
Q701-B	2.5	
Q701-C	147	
Q701-E	2.6	
Q703-B	2.7	
Q703-C	146	
Q703-E	2.5	
Q705-B	2.7	
Q705-C	143	
Q705-E	2.6	
Q721-B	2.1	
Q721-C	GND	
Q721-E	1.3	
Q831-B	4.3	
Q831-C	4.9	
Q831-E	4.9	
Q881-B	0	
Q881-C	4.7	
Q881-E	GND	
Q882-B	0	
Q882-C	4.5	
Q882-E	GND	
Q1071-B	2.6	
Q1071-C	9.1	
Q1071-E	1.9	

Device/Pin #	Volts/Mode

WAVEFORMS

NOTE: Waveforms were taken with color bar signal and the controls adjusted for normal picture.



Notice

- ☐ CORRECTION
 ☒ PRODUCTION CHANGE
☐ SERVICE FLASH
 ☐ ADD INFORMATION

SANYO

FILE NO.

Please add this notice to the Service Manual listed below.

REVISION 13

Category: COLOR TELEVISION	Date: AUGUST / 15 / 2001
Model: DS31590	Effective from: Chassis No. 31590-12
Destination: U.S.A. / CANADA	REF: No. SM780055-04

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. **If the Service Manual Chassis No. does not match the unit's**, additional Service Literature is required. This chassis is similar to Chassis No. 31590-03. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-03 used in Model DS31590 (SM780055-04).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

- A : Misprint B : Quality Reliability C : Standardization
 D : Design E : Add as a possible sub F : Schematic location change
 G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 12, Chassis Electrical Parts List	★C417	Old	404 081 2302 403 346 6822	MT-POLYPRO 0.2U M 200V MT-POLYPRO 0.2U J 250V	1	NO	D
		New	404 081 2609 403 346 7126	MT-POLYPRO 0.27U M 200V MT-POLYPRO 0.27U J 250V	1	NO	
	C461	Old	403 044 6609	ELECT 10U M 25V	1	NO	D
		New	403 049 9803	ELECT 2.2U M 50V	1	NO	
	C462	Old	403 043 9106	ELECT 47U M 16V	1	NO	D
		New	403 042 2405	ELECT 100U M 16V	1	NO	
	C831	Old	403 076 5304	CERAMIC 680P K 500V	1	NO	D
		New	403 076 6103	CERAMIC 820P K 500V	1	NO	
Page 13, Chassis Electrical Parts List	D502	Old		NOT USED	1	NO	D
		New	407 118 2207	ZENER DIODE 1Z75 (75V)	1	NO	
Page 18, Chassis Electrical Parts List	R461	Old	401 025 7409	CARBON 220 JA 1/6W	1	NO	D
		New	401 026 3905	CARBON 330 JA 1/6W	1	NO	

Parts list continued on back

G7GDA, PRODUCT CODE 111341080

REFERENCE No. SM780055-13

1. IN THE CHASSIS ELECTRICAL PARTS LIST (Continued)

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 18, Chassis Electrical Parts List	★R497	Old	401 064 5305	OXIDE MT 1.5 JA 2W	1	NO	D
		New	401 067 2509	OXIDE MT 3.3 JA 2W	1	NO	
	R509	Old	401 027 5502	CARBON 6.8K JA 1/6W	1	NO	D
		New	401 027 8602	CARBON 8.2K JA 1/6W	1	NO	
Page 20, Chassis Electrical Parts List	A100	Old	610 284 7147	ASSY, PWB, MAIN BRD	1	NO	D
		New	610 295 4159	ASSY, PWB, MAIN BRD	1	NO	
	A700	Old	610 281 9472	ASSY, PWB, SOCKET	1	NO	D
		New	610 295 4166	ASSY, PWB, SOCKET	1	NO	
	★K701	Old	645 025 6103	SOCKET, CRT 8P	1	NO	D
		New	645 042 7664	SOCKET, CRT 9P	1	NO	
	★Q900	Old	414 010 6103	CRT M78JUA361X71	1	NO	D
		New	414 011 5907	CRT A79AKB50X01(V)	1	NO	

2. IN THE CABINET / ACCESSORY PARTS LIST

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Key Number		Part No.	Description	Q'ty	Interchangeability	
Page 21, Cabinet / Accessory Parts List	N/A	Old	610 282 3325	OWNER'S MANUAL	1	YES	D
		New	610 289 3083	OWNER'S MANUAL	1	YES	
	N/A	Old	645 040 2845	RCTRANSMITTER	1	YES	D
		New	645 044 3336	RCTRANSMITTER	1	YES	

For parts or service contact

SANYO Fisher Service Corporation

**21605 Plummer Street
Chatsworth, CA 91311 (U.S.A.)**

**300 Applewood Crescent,
Concord, Ontario L4K 5C7 (CANADA)**

August / 2001 / 2000 SMC

Printed in U.S.A.

Notice

- ☐ CORRECTION
 ☒ PRODUCTION CHANGE
☐ SERVICE FLASH
 ☐ ADD INFORMATION

SANYO

FILE NO.

Please add this notice to the Service Manual listed below.

REVISION 12

Category: COLOR TELEVISION	Date: JUNE / 15 / 2001
Model: DS31590	Effective from: Chassis No. 31590-11
Destination: U.S.A. / CANADA	REF: No. SM780055-04

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. **If the Service Manual Chassis No. does not match the unit's**, additional Service Literature is required. This chassis is similar to Chassis No. 31590-03. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-03 used in Model DS31590 (SM780055-04).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

- A : Misprint B : Quality Reliability C : Standardization
 D : Design E : Add as a possible sub F : Schematic location change
 G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 12, Chassis Electrical Parts List	★C417	Old	404 081 2302 403 346 6822	MT-POLYPRO 0.2U M 200V MT-POLYPRO 0.2U J 250V	1	NO	D
		New	404 081 2401 403 346 6921	MT-POLYPRO 0.22U M 200V MT-POLYPRO 0.22U J 250V	1	NO	
	C461	Old	403 044 6609	ELECT 10U M 25V	1	NO	D
		New	403 050 6600	ELECT 3.3U M 50V	1	NO	
Page 18, Chassis Electrical Parts List	R460	Old	401 024 9008	CARBON 120 JA 1/6W	1	NO	D
		New	401 025 1308	CARBON 150 JA 1/6W	1	NO	
	R461	Old	401 025 7409	CARBON 220 JA 1/6W	1	NO	D
		New	401 026 3905	CARBON 330 JA 1/6W	1	NO	

Parts list continued on back

1. IN THE CHASSIS ELECTRICAL PARTS LIST (Continued)

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchange-ability	Reason
Page 18, Chassis Electrical Parts List	★R497	Old	401 064 5305	OXIDE MT 1.5 JA 2W	1	NO	D
		New	401 057 8009	OXIDE MT 1 JA 1W	1	NO	
	R506	Old	401 027 5205	CARBON 680 JA 1/6W	1	NO	D
		New	401 026 9600	CARBON 470 JA 1/6W	1	NO	
	R509	Old	401 027 5502	CARBON 6.8K JA 1/6W	1	NO	D
		New	401 027 8602	CARBON 8.2K JA 1/6W	1	NO	
Page 20, Chassis Electrical Parts List	A100	Old	610 284 7147	ASSY, PWB, MAIN BRD	1	NO	D
		New	610 288 3596	ASSY, PWB, MAIN BRD	1	NO	
	★Q900	Old	414 010 6103	CRT M78JUA361X71	1	NO	D
		New	414 011 2500	CRT A78LKU30X07(W)	1	NO	

2. IN THE CABINET / ACCESSORY PARTS LIST

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Key Number		Part No.	Description	Q'ty	Interchange-ability	
Page 21, Cabinet / Accessory Parts List	N/A	Old	645 040 2845	RCTRANSMITTER	1	YES	D
		New	645 044 3336	RCTRANSMITTER	1	YES	

For parts or service contact

SANYO Fisher Service Corporation

**21605 Plummer Street
Chatsworth, CA 91311 (U.S.A.)**

**300 Applewood Crescent,
Concord, Ontario L4K 5C7 (CANADA)**

Notice

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- ☐ CORRECTION
 ☒ PRODUCTION CHANGE
☐ SERVICE FLASH
 ☐ ADD INFORMATION

FILE NO.

Please add this notice to the Service Manual listed below.

REVISION 11

Category: COLOR TELEVISION	Date: NOVEMBER / 15 / 2001
Model: DS31590	Effective from: Chassis No. 31590-10
Destination: U.S.A. / CANADA	REF: No. SM780055-04

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. **If the Service Manual Chassis No. does not match the unit's**, additional Service Literature is required. This chassis is similar to Chassis No. 31590-03. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-03 used in Model DS31590 (SM780055-04).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

- A : Misprint B : Quality Reliability C : Standardization
 D : Design E : Add as a possible sub F : Schematic location change
 G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 12, Chassis Electrical Parts List	★C417	Old	404 081 2302 403 346 6822	MT-POLYPRO 0.2U M 200V MT-POLYPRO 0.2U J 250V	1	NO	D
		New	404 081 2807 403 346 7225	MT-POLYPRO 0.33U M 200V MT-POLYPRO 0.33U J 250V	1	NO	
	C461	Old	403 044 6609	ELECT 10U M 25V	1	NO	D
		New	403 049 9803	ELECT 2.2U M 50V	1	NO	
	C462	Old	403 043 9106	ELECT 47U M 16V	1	NO	D
		New	403 038 1603	ELECT 100U M 6.3V	1	NO	
Page 18, Chassis Electrical Parts List	R460	Old	401 024 9008	CARBON 120 JA 1/6W	1	NO	D
		New	401 025 3807	CARBON 180 JA 1/6W	1	NO	
	R461	Old	401 025 7409	CARBON 220 JA 1/6W	1	NO	D
		New	401 026 0607	CARBON 270 JA 1/6W	1	NO	

Parts list continued on back

G7EPM, PRODUCT CODE 111341080

REFERENCE No. SM780055-11

1. IN THE CHASSIS ELECTRICAL PARTS LIST (Continued)

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchange-ability	Reason
Page 18, Chassis Electrical Parts List	★R497	Old	401 064 5305	OXIDE MT 1.5 JA 2W	1	NO	D
		New	401 064 3806	OXIDE MT 1 JA 2W	1	NO	
	R506	Old	401 027 5205	CARBON 680 JA 1/6W	1	NO	D
		New	401 027 2303	CARBON 560 JA 1/6W	1	NO	
Page 20, Chassis Electrical Parts List	A100	Old	610 284 7147	ASSY, PWB, MAIN BRD	1	NO	D
		New	610 286 9026	ASSY, PWB, MAIN BRD	1	NO	
	★Q900	Old	414 010 6103	CRT M78JUA361X71	1	NO	D
		New	414 008 0502	CRT A79AEJ15X01	1	NO	

2. IN THE CABINET PARTS LIST

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Key NO.		Part No.	Description	Q'ty	Interchange-ability	Reason
Page 21, Chassis Electrical Parts List	N/A	Old	610 282 3325	OWNER'S MANUAL	1	NO	D
		New	610 289 3083	OWNER'S MANUAL	1	NO	
	N/A	Old	645 040 2845	RCTRANSMITTER	1	NO	D
		New	645 044 3336	RCTRANSMITTER	1	NO	

For parts or service contact

SANYO Fisher Service Corporation

**21605 Plummer Street
Chatsworth, CA 91311 (U.S.A.)**

**300 Applewood Crescent,
Concord, Ontario L4K 5C7 (CANADA)**

Notice



- ☐ CORRECTION
 ☒ PRODUCTION CHANGE
☐ SERVICE FLASH
 ☐ ADD INFORMATION

FILE NO.

Please add this notice to the Service Manual listed below.

REVISION 10

Category: COLOR TELEVISION	Date: JULY / 15 / 2001
Model: DS31590	Effective from: Chassis No. 31590-09
Destination: U.S.A.	REF: No. SM780055-04

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. **If the Service Manual Chassis No. does not match the unit's**, additional Service Literature is required. This chassis is similar to Chassis No. 31590-03. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-03 used in Model DS31590 (SM780055-04).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

- A : Misprint B : Quality Reliability C : Standardization
 D : Design E : Add as a possible sub F : Schematic location change
 G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 12, Chassis Electrical Parts List	★C411	Old	403 343 8502 404 077 5003	MT-POLYPRO 8600P H 1.5K MT-POLYPRO 8600P H 1.5K	1	NO	D
		NEW	403 343 8205 404 077 4600	MT-POLYPRO 7800P H 1.5K MT-POLYPRO 7800P H 1.5K	1	NO	
	★C414	New	403 083 4307	POLYPRO 0.022U J 400V	1	NO	D
		New	403 083 3904	POLYPRO 0.018U J 400V	1	NO	
	C461	Old	403 044 6609	ELECT 10U M 25V	1	NO	D
		New	403 049 9803	ELECT 2.2U M 50V	1	NO	
	C462	Old	403 043 9106	ELECT 47U M 16V	1	NO	D
		New	403 038 1603	ELECT 100U M 6.3V	1	NO	
Page 18, Chassis Electrical Parts List	R460	Old	401 024 9008	CARBON 120 JA 1/6W	1	NO	D
		New	401 026 3905	CARBON 330 JA 1/6W	1	NO	
	R461	Old	401 025 7409	CARBON 220 JA 1/6W	1	NO	D
		New	401 026 0607	CARBON 270 JA 1/6W	1	NO	

1. IN THE CHASSIS ELECTRICAL PARTS LIST (Continued)

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchange-ability	Reason
Page 18, Chassis Electrical Parts List	★R497	Old	401 064 5305	OXIDE MT 1.5 JA 2W	1	NO	D
		New	401 066 3002	OXIDE MT 2.2 JA 2W	1	NO	
	R504	Old	401 027 5502	CARBON 6.8K JA 1/6W	1	NO	D
		New	401 024 7400	CARBON 10K JA 1/6W	1	NO	
	R506	Old	401 027 5205	CARBON 680 JA 1/6W	1	NO	D
		New	401 026 6609	CARBON 390 JA 1/6W	1	NO	
	R508	Old	401 024 9701	CARBON 12K JA 1/6W	1	NO	D
		New	401 025 1902	CARBON 15K JA 1/6W	1	NO	
	R509	Old	401 027 5502	CARBON 6.8K JA 1/6W	1	NO	D
		New	401 024 7400	CARBON 10K JA 1/6W	1	NO	
	R513	Old		NOT USED		NO	D
		New	401 007 1104	CARBON 1K JA 1/2W	1	NO	
Page 20, Chassis Electrical Parts List	A100	Old	610 284 7147	ASSY, PWB, MAIN BRD	1	NO	D
		New	610 284 4832	ASSY, PWB, MAIN BRD	1	NO	
	★Q900	Old	414 010 6103	CRT M78JUA361X71	1	NO	D
		New	414 010 1900	CRT A79ECK262X54	1	NO	

For parts or service contact

SANYO Fisher Service Corporation

21605 Plummer Street

Chatsworth, CA 91311 (U.S.A.)

300 Applewood Crescent,

Concord, Ontario L4K 5C7 (CANADA)

Notice



- ☐ CORRECTION
 ☒ PRODUCTION CHANGE
☐ SERVICE FLASH
 ☐ ADD INFORMATION

FILE NO.

Please add this notice to the Service Manual listed below.

REVISION 9

Category: COLOR TELEVISION	Date: JUNE / 15 / 2001
Model: DS31590	Effective from: Chassis No. 31590-08
Destination: U.S.A. / CANADA	REF: No. SM780055-04

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. **If the Service Manual Chassis No. does not match the unit's**, additional Service Literature is required. This chassis is similar to Chassis No. 31590-03. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-03 used in Model DS31590 (SM780055-04).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

- A : Misprint B : Quality Reliability C : Standardization
 D : Design E : Add as a possible sub F : Schematic location change
 G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 20, Chassis Electrical Parts List	A100	Old	610 284 7147	ASSY, PWB, MAIN BRD	1	YES	D
		New	610 286 3031	ASSY, PWB, MAIN BRD	1	YES	
	★Q900	Old	414 009 6103	CRT M78JUA361X71	1	YES	D
		New	414 010 6905	CRT M78JUA361X72	1	YES	

Parts list continued on back

2. IN THE CABINET / ACCESSORY PARTS LIST

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Key Number		Part No.	Description	Q'ty	Interchange-ability	Reason
Page 21, Cabinet / Accessory Parts List	N/A	Old	645 040 2845	RC TRANSMITTER	1	YES	D
		New	645 044 3336	RC TRANSMITTER	1	YES	

For parts or service contact

SANYO Fisher Service Corporation

**21605 Plummer Street
Chatsworth, CA 91311 (U.S.A.)**

**300 Applewood Crescent,
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Notice

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FILE NO.

Please add this notice to the Service Manual listed below.

REVISION 8

Category: COLOR TELEVISION	Date: AUGUST / 15 / 2000
Model: DS31590	Effective from: Chassis No. 31590-07
Destination: U.S.A. / CANADA	REF: No. SM780055-04

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. **If the Service Manual Chassis No. does not match the unit's**, additional Service Literature is required. This chassis is similar to Chassis No. 31590-03. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-03 used in Model DS31590 (SM780055-04).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

- A : Misprint B : Quality Reliability C : Standardization
 D : Design E : Add as a possible sub F : Schematic location change
 G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 12, Chassis Electrical Parts List	★C417	Old	404 081 2302 403 346 6822	MT-POLYPRO 0.2U M 200V MT-POLYPRO 0.2U J 250V	1	NO	D
		New	404 081 2401 403 346 6921	MT-POLYPRO 0.22U M 200V MT-POLYPRO 0.22U J 250V	1	NO	
	C461	Old	403 044 6609	ELECT 10U M 25V	1	NO	D
		New	403 050 6600	ELECT 3.3U M 50V	1	NO	
Page 18, Chassis Electrical Parts List	R460	Old	401 024 9008	CARBON 120 JA 1/6W	1	NO	D
		New	401 025 1308	CARBON 150 JA 1/6W	1	NO	
	R461	Old	401 025 7409	CARBON 220 JA 1/6W	1	NO	D
		New	401 026 3905	CARBON 330 JA 1/6W	1	NO	

Parts list continued on back

1. IN THE CHASSIS ELECTRICAL PARTS LIST (Continued)

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchange-ability	Reason
Page 18, Chassis Electrical Parts List	★R497	Old	401 064 5305	OXIDE MT 1.5 JA 2W	1	NO	D
		New	401 057 8009	OXIDE MT 1 JA 1W	1	NO	
	R506	Old	401 027 5205	CARBON 680 JA 1/6W	1	NO	D
		New	401 026 9600	CARBON 470 JA 1/6W	1	NO	
	R509	Old	401 027 5502	CARBON 6.8K JA 1/6W	1	NO	D
		New	401 027 8602	CARBON 8.2K JA 1/6W	1	NO	
Page 20, Chassis Electrical Parts List	A100	Old	610 284 7147	ASSY, PWB, MAIN BRD	1	NO	D
		New	610 288 3596	ASSY, PWB, MAIN BRD	1	NO	
	★Q900	Old	414 010 6103	CRT M78JUA361X71	1	NO	D
		New	414 010 9401	CRT A78LKU30X12(G)	1	NO	

For parts or service contact

SANYO Fisher Service Corporation

**21605 Plummer Street
Chatsworth, CA 91311 (U.S.A.)**

**300 Applewood Crescent,
Concord, Ontario L4K 5C7 (CANADA)**

Notice



- ☐ CORRECTION
 ☒ PRODUCTION CHANGE
☐ SERVICE FLASH
 ☐ ADD INFORMATION

FILE NO.

Please add this notice to the Service Manual listed below.

REVISION 7

Category: COLOR TELEVISION	Date: MAY / 15 / 2000
Model: DS31590	Effective from: Chassis No. 31590-06
Destination: U.S.A.	REF: No. SM780055-04

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. **If the Service Manual Chassis No. does not match the unit's**, additional Service Literature is required. This chassis is similar to Chassis No. 31590-03. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-03 used in Model DS31590 (SM780055-04).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

- A : Misprint B : Quality Reliability C : Standardization
 D : Design E : Add as a possible sub F : Schematic location change
 G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 12, Chassis Electrical Parts List	★C411	Old	404 069 6407 404 077 5003	MT-POLYPRO 8600P H 1.5K MT-POLYPRO 8600P H 1.5K	1	NO	D
		NEW	404 068 6101 404 077 4600	MT-POLYPRO 7800P H 1.5K MT-POLYPRO 7800P H 1.5K	1	NO	
	★C412	Old	404 068 6200 404 077 4709	MT-POLYPRO 8000P H 1.5K MT-POLYPRO 8000P H 1.5K	1	NO	D
		NEW	404 068 6101 404 077 4600	MT-POLYPRO 7800P H 1.5K MT-POLYPRO 7800P H 1.5K	1	NO	
	★C413	Old	403 083 4911	POLYPRO 0.027U J 400V	1	NO	D
		New	403 083 4317	POLYPRO 0.022U J 400V	1	NO	
	★C417	Old	403 082 9818	POLYPRO 0.33U J 200V	1	NO	D
		New	403 082 8019	POLYPRO 0.2U J 200V	1	NO	
	C461	Old	403 051 0607	ELECT 4.7U M 50V	1	NO	D
		New	403 049 9803	ELECT 2.2U M 50V	1	NO	
	C503	Old	403 205 4703	ELECT 4.7U K 25V	1	NO	D
		New	403 204 1802	ELECT 3.3U K 50V	1	NO	

G7EDM, PRODUCT CODE 111341080

REFERENCE No. SM780055-07

1. IN THE CHASSIS ELECTRICAL PARTS LIST (Continued)

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 13, Chassis Electrical Parts List	D428	Old	407 099 7109 407 054 5904	ZENER DIODE MTZJ15C ZENER DIODE RD15EB3	1	NO	D
		NEW	407 099 7208 407 054 7007	ZENER DIODE MTZJ16A ZENER DIODE RD16EB1	1	NO	
Page 18, Chassis Electrical Parts List	R460	Old	401 026 9303	CARBON 47 JA 1/6W	1	NO	D
		New	401 026 3905	CARBON 330 JA 1/6W	1	NO	
	★R497	Old	401 057 9105	OXIDE MT 1.2 JA 1W	1	NO	D
		New	401 066 3002	OXIDE MT 2.2 JA 2W	1	NO	
	R503	Old	401 027 5502	CARBON 6.8K JA 1/6W	1	NO	D
		New	401 027 2600	CARBON 5.6K JA 1/6W	1	NO	
	R504	Old	401 027 8602	CARBON 8.2K JA 1/6W	1	NO	D
		New	401 024 7400	CARBON 10K JA 1/6W	1	NO	
	R505	Old	401 006 8104	CARBON 1.2 JA 1/2W	1	NO	D
		New	401 006 8401	CARBON 1.5 JA 1/2W	1	NO	
	R506	Old	401 027 5205	CARBON 680 JA 1/6W	1	NO	D
		New	401 026 6609	CARBON 390 JA 1/6W	1	NO	
	R507	Old	401 006 7602	CARBON 1 JA 1/2W	1	NO	D
		New	401 006 8807	CARBON 1.8 JA 1/2W	1	NO	
	R509	Old	401 026 9907	CARBON 4.7K JA 1/6W	1	NO	D
		New	401 024 7400	CARBON 10K JA 1/6W	1	NO	
	R513	Old		NOT USED		NO	D
		New	401 007 1104	CARBON 1K JA 1/2W	1	NO	
Page 20, Chassis Electrical Parts List	A100	Old	610 278 0888	ASSY, PWB, MAIN BRD	1	NO	D
		New	610 278 4602	ASSY, PWB, MAIN BRD	1	NO	
	★PS601	Old	408 038 5606	THERMISTER	1	NO	D
		New	408 006 7304	THERMISTER	1	NO	
	★Q900	Old	414 009 5407 414 009 5704	CRT M78JUA068X78 CRT M78LKU30X12(W)	1	NO	D
		New	414 010 1900	CRT A79ECK262X54	1	NO	

For parts or service contact

SANYO Fisher Service Corporation
21605 Plummer Street
Chatsworth, CA 91311

May / 2000 / 2000 SMC

Printed in U.S.A.

Notice



- ☐ CORRECTION
 ☒ PRODUCTION CHANGE
☐ SERVICE FLASH
 ☐ ADD INFORMATION

FILE NO. C-2481

Please add this notice to the Service Manual listed below.

REVISION 5

Category: COLOR TELEVISION	Date: JULY / 20 / 2000
Model: DS31590	Effective from: Chassis No. 31590-04
Destination: U.S.A. / CANADA	REF: No. SM780055-04

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. **If the Service Manual Chassis No. does not match the unit's**, additional Service Literature is required. This chassis is similar to Chassis No. 31590-03. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-03 used in Model DS31590 (SM780055-04).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

- A : Misprint B : Quality Reliability C : Standardization
 D : Design E : Add as a possible sub F : Schematic location change
 G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 20, Chassis Electrical Parts List	A100	Old	610 284 7147	ASSY, PWB, MAIN BRD	1	YES	D
		New	610 286 3031	ASSY, PWB, MAIN BRD	1	YES	
	★Q900	Old	414 009 6103	CRT M78JUA361X71	1	YES	D
		New	414 010 6905	CRT M78JUA361X72	1	YES	

For parts or service contact

SANYO Fisher Service Corporation

**21605 Plummer Street
Chatsworth, CA 91311 (U.S.A.)**

**300 Applewood Crescent,
Concord, Ontario L4K 5C7 (CANADA)**

G7EFM, PRODUCT CODE 111341080

REFERENCE No. SM780055-05

Notice

SANYO

☐ CORRECTION
☐ SERVICE FLASH

☒ PRODUCTION CHANGE
☐ ADD INFORMATION

FILE NO. C-2481

Please add this notice to the Service Manual listed below.

REVISION 4

Category : <u>COLOR TELEVISION</u>	Date: <u>MAY / 15 / 2000</u>
Model: <u>DS31590</u>	Effective from : Chassis No. <u>31590-03</u>
Destination: <u>U.S.A.</u>	REF : No. <u>SM780055</u>

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. **If the Service Manual Chassis No. does not match the unit's**, additional Service Literature is required. This chassis is similar to Chassis No. 31590-00, however, all Service Information is given in this Notice for Chassis No. 31590-03.

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Specifications

Power Rating	120V, 60Hz 89W (Avg), 2.5A (Max)
Antenna Input Impedance	75Ω UHF/VHF/CATV
Receiving Channel	2 - 13 (VHF), 14 - 69 (UHF), 01, 14-94, 95-125 (CATV)
Remote Ready	38 Key Remote Control
Sound Output	1.0 W/CH
Intermediate Frequency	
Picture IF Carrier	45.75MHz
Sound IF Carrier	41.25MHz
Color Sub Carrier	42.17MHz
Picture Tube	M78JUA361X71
Semiconductors	
Integrated Circuits	10
Transistors	38
Except within Tuner and RC Pre-Amp.	
Cabinet Dimensions	
Width	762mm
Height	707mm
Depth	539mm

SAFETY INSTRUCTIONS

SAFETY PRECAUTIONS

WARNING: The chassis of this receiver has a floating ground with the potential of one half the AC line voltage in respect to earth ground. Service should not be attempted by anyone not familiar with the precautions necessary when working on this type of equipment.

The following precautions must be observed:

1. An isolation transformer must be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Comply with all caution and safety-related notes provided on the side of the cabinet, inside the cabinet, on the chassis, and the picture tube.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as control knobs, adjustment covers, shields and barriers.

DO NOT OPERATE THIS TELEVISION RECEIVER WITHOUT THE PROTECTIVE SHIELD IN POSITION AND PROPERLY SECURED.

4. Before replacing the back cover of the set, thoroughly inspect the inside of the cabinet to see that no stray parts or tools have been left inside.
Before returning any television to the customer, the service technician must perform the following safety checks to be sure that the unit is completely safe to operate without danger of electrical shock.

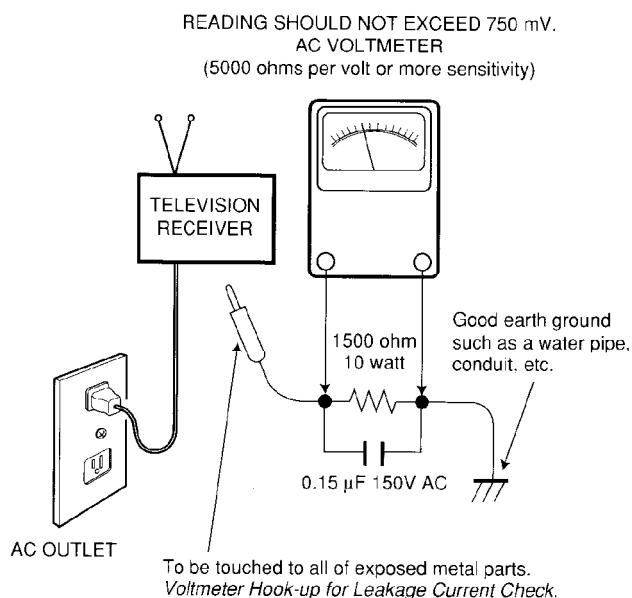
ANTENNA COLD CHECK

Remove AC plug from the 120 VAC outlet and place a jumper across the two blades. Connect one lead of an ohmmeter to the jumpered AC plug, and touch the other lead to each exposed antenna terminal (UHF and VHF antenna terminals). The resistance must measure between 1M ohm and 5.2M ohm. Any resistance value below or above this range indicates an abnormality which requires corrective action.

LEAKAGE CURRENT CHECK

Plug the AC line cord directly into a 120 VAC outlet. (Do not use an isolation transformer for this check.) Use an AC voltmeter, that has 5000 ohms per volt or more sensitivity. Connect a 1500 ohm 10 watt resistor, paralleled by a 0.15 μ F 150 VAC capacitor, between a known good earth ground (water pipe, conduit, etc.) and all exposed metal parts of the cabinet (antennas, handle bracket, metal cabinet, screw heads, metal overlays, control shafts, etc.). Measure the AC voltage across the 1500 ohm resistor. The AC voltage should not exceed 750 mV. A reading exceeding 750 mV indicates that a dangerous potential exists. The fault must be located and corrected. Repeat the above test with the receiver power plug reversed.

NEVER RETURN A RECEIVER TO THE CUSTOMER WITHOUT TAKING THE NECESSARY CORRECTIVE ACTION.



X-RADIATION PRECAUTION

The primary source of X-RADIATION in solid-state receivers is the picture tube. The picture tube is specially constructed to limit X Ray emission. For continued X-RADIATION protection, the replacement tube must be the same type as the original (including the suffix letter in the part numbers). Excessive high voltage may produce potentially hazardous X-RADIATION. To avoid such hazards, the high voltage must be maintained within specific limits. Refer to the X-RADIATION WARNING NOTE on the CHASSIS SCHEMATIC in this service manual for specific high voltage limits. If the high voltage exceeds specified limits, check the components specified on the chassis schematic diagram and take the necessary corrective action. Carefully follow the instructions for the +B Voltage Check and the High Voltage Check to maintain the high voltage within the specified limits.

HIGH VOLTAGE HOLD-DOWN TEST

To prevent X-RADIATION from the picture tube due to excessive high voltage, a HOLD-DOWN circuit is provided in the high voltage circuit. Every time the receiver is serviced, the high voltage HOLD-DOWN circuit must be tested for proper operation. Refer to the HIGH VOLTAGE HOLD-DOWN TEST in service adjustments.

PRODUCT SAFETY NOTICE

When replacing components in a receiver, always keep in mind the necessary product safety precautions. Pay special attention to the replacement of components marked with a star (★) in the parts list and in the schematic diagrams. To ensure safe product operation, it is necessary to replace those components with the exact same PARTS.

SERVICE ADJUSTMENTS

GENERAL

This set has an On-screen Service Menu system included in the CPU that allows remote operation for most of the service adjustments.

IC802 (EEPROM) REPLACEMENT

When IC802 (EEPROM) is replaced, IC801 (CPU) will automatically write the initial reference data into IC802 for basic TV operation. However, the bus data should be checked and some bus data should be set up before attempting the service adjustments. (See pages 4 – 5 for detailed information.)

INITIAL BUS DATA SETUP

Note: When IC802 (EEPROM) is replaced, the Service Menu NO. 01 HP (H-Phase), NO. 14 AF (Auto Flesh), NO. 21 GD (G Drive Reduction), NO. 24 AG (AFC Gain), NO. 26 SCO (Sub Color), NO. 27 STI (Sub-Tint), NO. 28 SSH (Sub Sharpness), NO. 30 OP2 (Option 2), NO. 31 HR (OSD Display H-Position) and NO. 38 SBO (Sub Bright Offset) should be set up for proper TV operation before attempting the service adjustments.

1. Disconnect the AC power cord (AC 120V line).
2. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
3. Select NO. 01 HP (H-Phase) with ▲ or ▼ key. Adjust the data with + or – key for 20.
4. Select NO. 14 AF (Auto Flesh) with ▲ or ▼ key. Adjust the data with + or – key for 1.
5. Select NO. 21 GD (G Drive Reduction) with ▲ or ▼ key. Adjust the data with + or – key for 8.
6. Select NO. 24 AG (AFC Gain) with ▲ or ▼ key. Adjust the data with + or – key for 0.
7. Select NO. 26 SCO (Sub Color) with ▲ or ▼ key. Adjust the data with + or – key for 7.
9. Select NO. 27 STI (Sub Tint) with ▲ or ▼ key. Adjust the data with + or – key for 19.
10. Select NO. 28 SSH (Sub Sharpness) with ▲ or ▼ key. Adjust the data with + or – key for 6.
11. Select NO. 30 OPT2 (Option 2) with ▲ or ▼ key. Adjust the data with + or – key for 65
12. Select NO. 31 HR (OSD Display H-Position) with ▲ or ▼ key. Adjust the data with + or – key for 47.
13. Select NO. 38 SBO (Sub Bright Offset) with ▲ or ▼ key. Adjust the data with + or – key for 3.
14. Press the MENU key to turn off the Service Menu display.

ON-SCREEN SERVICE MENU SYSTEM

1. Enter the Service Menu:

- While pressing the MENU key, reconnect the AC power cord. The Service Menu Display will now appear. (See Figure 1 below.)

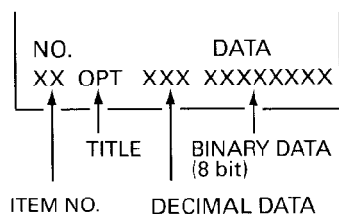


Figure 1. Service Menu Display

2. Service Adjustments:

- Press the ▲ or ▼ key to select the desired service menu you want to adjust. (See page 4 for On-screen Service Menu.)
- Use the + or – key to adjust the data.

3. Exit from the Service Menu:

- Press the MENU key to turn off the Service Menu display.

Table 1. ON-SCREEN SERVICE MENU

When IC802 (EEPROM) is replaced, check the bus data to confirm they are the same as below. The shaded menu should be checked and be set up or readjusted according to the procedures described in the following pages. Initial Setup Data marked with an * should be changed from Initial Reference Data. (See page 3 for Initial Bus Data Setup.)

NO.	TITLE	INITIAL REFERENCE DATA	INITIAL SETUP DATA	RANGE OF DATA	FUNCTION
01	HP	15	20*	0~31	H-Phase (H-Centering)
02	IAS	0	0	0, 1	IF AGC Switch 0: TV (Normal) 1: AV (IF Gain Minimum)
03	RAD	25	25	0~63	RF AGC Delay
04	PT	64	64	0~127	PLL Tuning
05	ADA	31	31	0~63	APC Detect Adjust
06	CD	0	0	0, 1	C-Diff
07	VS	32	32	0~63	Vertical Size
08	RB	0	0	0~255	Red Bias
09	GB	0	0	0~255	Green Bias
10	BB	0	0	0~255	Blue Bias
11	RD	60	60	0~127	Red Drive
12	BD	60	60	0~127	Blue Drive
13	TDS	0	0	0, 1	Trap & D (B.P.F.) Switch 0: OFF 1: ON
14	AF	0	1*	0, 1	Auto Flesh 0: OFF 1: ON
15	BS	0	0	0, 1	Black Stretch 0: OFF 1: ON
16	VL	4	4	0~7	Video Level
17	FL	15	15	0~31	FM Level
18	NIS	1	1	0, 1	N/I Switch (Black Noise Inverter) 0: OFF 1: ON
19	ABL	1	1	0, 1	ABL Defeat 0: OFF 1: ON
20	WP	1	1	0, 1	White Peak Limiter 0: OFF 1: ON
21	GD	7	8*	0~15	Green Drive Reduction
22	VC	0	0	0~7	Vert. Comp
23	VD	32	32	0~63	Vert. DC
24	AG	3	0*	0~3	AFC Gain 00: Auto 01: High Gain 10: Low Gain 11: Non-Gate
25	SB	32	32	0~63	Sub-Brightness
26	SCO	10	7*	0~31	Sub-Color
27	STI	14	19*	0~31	Sub-Tint
28	SSH	8	6*	0~15	Sub-Sharpness
29	OPT	0	0	0~255	Option 1 (See Note 1 page 5.)
30	OP2	0	65*	0~255	Option 2 (See Note 2 page 5.)
31	HR	43	47*	0~63	H-Position (OSD H-Position)
32	ATT	15	15	0~15	Attenuation
33	STE	—	—	—	Not Used
34	FIL	—	—	—	Not Used
35	WDB	32	32	0~63	Wideband
36	SPC	32	32	0~63	Spectral
37	SPV	—	—	—	Not Used
38	SBO	5	3*	0~255	Sub Bright Offset
39	PCO	42	42	0~127	PIP Color
40	PTI	36	36	0~63	PIPTint
41	PUV	24	24	0~255	PIP Upper Vertical Position
42	PDV	147	147	0~255	PIP Lower Vertical Position
43	PLH	9	9	0~255	PIP Left Side Horizontal Position
44	PRH	99	99	0~255	PIP Right Side Horizontal Position
45	PCN	47	47	0~127	PIP Contrast
46	PBS	14	14	0~63	PIP Burst Gate Position
47	DRV	55	60*	0~127	Red Drive Adjustment (See Note 3 page 5.)
		55	60*	0~127	Blue Drive Adjustment (See Note 3 page 5.)
		—	—	—	—
48	—	0	0	0~255	Red Bias Adjustment (See Note 4 page 5.)
		0	0	0~255	Green Bias Adjustment (See Note 4 page 5.)
		0	0	0~255	Blue Bias Adjustment (See Note 4 page 5.)

SERVICE ADJUSTMENTS (Continued)

PROGRAM CODES

The microprocessor used in this model is a multi-purpose type and is used in several different models. To ensure proper operation and the correct features for your particular model, the Program Codes must be correct.

Note 1. Option Data 1 (NO. 29 OPT) should be decimal 0 (00000000 binary). See page 3 ON-SCREEN SERVICE MENU SYSTEM for set up procedure. If this program code is wrong the TV will not operate properly.

BIT	FUNCTION	DATA	
		0	1
0, 1	TV HOTEL MONITOR	00: TV 01: HOTEL 10: MONITOR (*1) 11: INHIBITED (=TV)	
2	VIDEO INPUT	NONE (*2)	YES
3, 4	CLOCK	00: NONE 01: YES (AC 60 HZ) 10: YES (INT OSC) 11: INHIBITED (=NONE)	
5	STEREO/MONO	MONO (*3)	STEREO
6, 7	SURROUND	00: NONE 01: YES 10: Q SOUND 11: INHIBITED (=NONE)	

Note 2. Option Data 2 (NO. 30 OPT 2) should be decimal 65 (01000001 binary). See page 3 INITIAL DATA SETUP, step 11, for set up procedure. If this program code is wrong the TV will not operate properly.

BIT	FUNCTION	DATA	
		0	1
0	NOT USED	—	—
1	COLOR ENHANCER	NONE	YES
2	INITIAL CHANNEL	NONE	YES (*4)
3	NOT USED	—	—
4	PIP	NONE	YES
5	AV1/AV1, AV2	AV1	AV1, AV2
6	TONE/BASS, TREBLE	BASS, TR	TONE(*5)
7	GAME	NONE	YES

- *1. When the Monitor option is used, the CPU regards the Video Input option as Yes and the PIP option as None.
- *2. When the None Video Input option is used, the CPU regards the PIP option as None.
- *3. When the Mono option is used, the CPU regards the Surround and Tone options as None.
- *4. When the Initial Channel option is used the Initial Channel and XDS (Extended Data Service) features are available.
- *5. When the Mono option is used, the CPU regards the Tone option as None.

Note 3. Red/Blue Drive Adjustments in Service Menu NO. 47 DRV: Adjust Red and Blue Drive Levels alternately with 1, 3, 7, and 9 keys on the remote control. (See figure 2.) The Drive Level adjustment data will be written in the Service Menu No. 11 and 12 automatically.

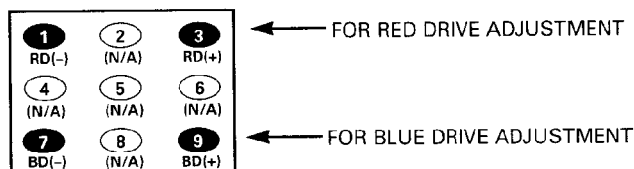


Figure 2.

Note 4. Red/Green/Blue Bias Adjustments in Service Menu NO. 48: Adjust each Bias Level with 1, 3, 4, 6, 7, or 9 key on the remote control. (See figure 3.) The Bias Level adjustment data will be written in the Service Menu No. 08 ~ 10 automatically.



Figure 3.

SERVICE ADJUSTMENTS (Continued)

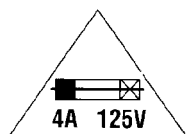
ANTENNA CONNECTIONS

This receiver is designed for UHF/VHF reception. A 75 ohm terminal is provided for UHF and VHF receptions. When connecting a CATV antenna system, connect the 75 ohm coaxial cable directly to the 75 ohm terminal. For 300 ohm VHF antenna, use an adapter (not included with the TV set).

CIRCUIT PROTECTION

Fuse F601 (4A) is included in the AC line. This fuse must be replaced with the proper fuse (see Parts List).

CAUTION



FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH THE SAME TYPE 4A, 125V FUSE.

ATTENTION : POUR MAINTENIR LA PROTECTION CONTRE LES RISQUES D'INCENDIE UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE 4A, 125V.

+B VOLTAGE CHECK

Connect Voltmeter + lead to TJ1 130V and – lead to ground (TE7). Connect receiver to AC 120V line. Tune receiver to an active channel. Reset the picture controls to the FACTORY PRESET levels (press remote control RESET key twice). Voltage must measure between +128.0V and 132.0V. If the voltage is out of this range, the power circuit must be checked. No +B adjustment is provided on this chassis.

HORIZONTAL WIDTH ADJUSTMENT

1. Tune receiver to an active channel.
2. Adjust H-Width Control (VR461) for proper width.
3. Select several other channels and check width.

HORIZONTAL CENTERING ADJUSTMENT

1. Tune receiver to an active channel.
2. Check that picture is in the horizontal center of TV screen. If picture is not centered horizontally, perform steps 3 ~ 6.
3. Turn off the receiver and disconnect the AC power cord (120V AC line).
4. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 01 HP (Horizontal Phase) with ▲ or ▼ key.
6. Adjust the data with + or – key for horizontal center. To turn off the Service Menu display, press the MENU key.

VERTICAL SIZE ADJUSTMENT

1. Tune receiver to an active channel.
2. Check the vertical size of the picture. If the vertical size is too large or small, perform steps 3 ~ 6.
3. Turn off the receiver and disconnect the AC power cord (120V AC line).
4. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 07 VS (Vertical Size) with ▲ or ▼ key.
6. Adjust the data with + or – key for full scan. To turn off the Service Menu display, press the MENU key.

VERTICAL CENTERING ADJUSTMENT

1. Tune receiver to an active channel.
2. Check that picture is in the center of TV screen. If picture center is too low, connect resistor R513 (470 ohm, 1W). If picture center is too high, connect resistor R512 (470 ohm, 1W).

GRAYSCALE ADJUSTMENT

1. Set the picture controls to the Sports levels or Reset (use MENU key and ▲ or ▼ key or RESET key).
2. Turn off the receiver and disconnect the AC power cord (120V AC line).
3. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
4. Select NO. 08 RB (Red Bias), NO. 09 GB (Green Bias), and NO. 10 BB (Blue Bias) with ▲ or ▼ key and set each data to 0 with + or – key.
5. Select NO. 11 RD (Red Drive) and NO. 12 BD (Blue Drive) with ▲ or ▼ key and set each data to 60 with + or – key.
6. Set NO. 21 GD (G Drive Reduction) data to 8, NO. 25 SB (Sub-Brightness) data to 32, NO. 26 SCO (Sub-Color) data to 7, NO. 27 STI (Sub-Tint) to 19, and NO. 28 SSH (Sub-Sharpness) data to 6 with ▲ or ▼, and + or – keys.
7. Turn Screen Control (T402) to minimum (fully counter-clockwise).
8. Select the Service Menu NO. 48 (Bias Adjustments) with ▲ or ▼ key.
9. Advance Screen Control (T402) clockwise to obtain just visible one color line. If line does not appear, place this control to maximum (fully clockwise).
10. Raise each Bias Level with 3, 6, and 9 keys to obtain just visible white line. (See Figure 4 below.)

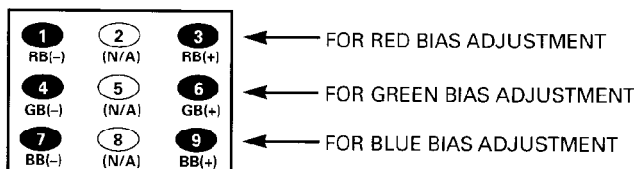


Figure 4. Remote Control Number keys' function in Service Menu NO. 48

11. Select the Service Menu NO. 47 DRV (Drive Adjustments) with ▲ or ▼ key.
12. Adjust Red and Blue Drive Levels alternately with 1, 3, 7, or 9 key to produce normal black and white picture in highlight areas. (See figure 5 below.)

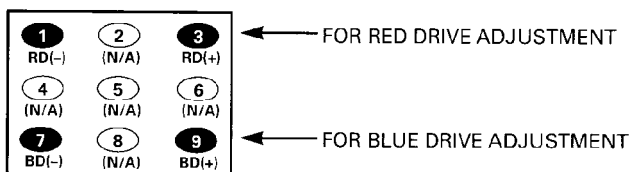


Figure 5. Remote Control Number keys' function in Service Menu NO. 47 DRV

13. Check for proper grayscale at all brightness levels. To turn off the Service Menu display, press the MENU key.

Note: If Grayscale Adjustment is made after picture tube replacement, check Brightness Level Adjustment.

FOCUS ADJUSTMENT

Adjust focus control (T402) for well defined scanning lines.

PLL TUNING ADJUSTMENT

Note: PLL Tuning must be adjusted after IC101 (Signal Processor), IC802 (EEPROM) or T151 (PLL VCO Coil) is replaced.

1. Disconnect the AC power cord (120V AC line).
2. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
3. Select NO. 04 PT (PLL Tuning) with ▲ or ▼ key.
4. Adjust the data to 64 with + or – key.
5. Disconnect the AC power cord (120V AC line).
6. Connect voltmeter + lead to TP113 on main board and – lead to main board ground.
7. Press and Hold the POWER key on the front control panel while connecting the AC power cord. TV will turn on.
8. Disconnect the antenna terminal and select a good quality active color channel in your area, using keys 0 ~ 9 on the remote control. Wait a few seconds, and then reconnect the antenna terminal.
9. Turn PLL VCO coil (T151) on main board fully clockwise, and then gradually turn the coil counterclockwise until voltage is at the maximum level (approximately 6.7 VDC). Continue to turn the coil counterclockwise until the voltage is at the minimum level (approximately 0.7 VDC), and then turn the coil clockwise until voltage indicates 3.8 ± 1.0 VDC. Voltage change in the coil adjustments is shown in Figure 6.
10. Disconnect voltmeter from chassis.

Select every active channel with keys 0 ~ 9 and the scanning keys, and check to be sure the AFT is operating properly.

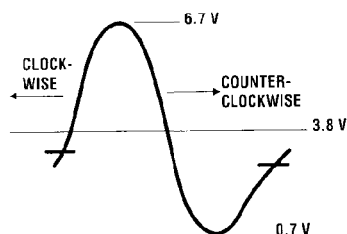


Figure 6. Voltage Change in Coil Adjustment

RF-AGC ADJUSTMENT

1. Tune receiver to strongest VHF station in your area.
2. Set contrast and brightness controls for maximum.
3. Turn off the receiver and disconnect the AC power cord (120V AC line).
4. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 03 RAD (RF-AGC Delay) with ▲ or ▼ key.
6. Adjust the data with + or – key in the direction which causes snow to appear; then in the opposite direction until the snow just disappears.
7. To turn off the Service Menu display, press the MENU key.

BRIGHTNESS LEVEL ADJUSTMENT

Note: Grayscale, RF-AGC, Video Level, and High Voltage Check must be adjusted before attempting Brightness Level Adjustment.

1. Connect a color-bar generator to the antenna terminals.
2. Switch the generator to the crosshatch pattern.
3. Reset the picture controls to the Sports levels.

4. Connect voltmeter (high impedance) + lead to terminal TP51 and – lead to terminal TP50 on main board. Set voltmeter for 1.5V ~ 3V range.
5. Turn off the receiver and disconnect the AC power cord (120V AC line).
6. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
7. Select NO. 25 SB (Sub Brightness) with ▲ or ▼ key.
8. Adjust the data with + or – key for 820mVDC.
9. Press the MENU key to turn off the Service Menu display.
10. Check brightness level on every active channel, readjust (repeat steps 5 ~ 9) if necessary).

Note: Do not set to excessive brightness level, otherwise the contrast level will be suppressed.

HIGH VOLTAGE HOLD-DOWN TEST

Every time the receiver is serviced, the HIGH VOLTAGE HOLD-DOWN circuit must be tested for proper operation by following these steps:

1. Connect receiver to 120V AC line. Tune receiver to active channel. Reset the picture controls to the Sports levels.
2. Check that the voltage measured between TP7 and TE7 (ground side) is within 16.5 VDC to 21 VDC. If the voltage is out of this range, the Hold-Down Circuit must be checked.
3. Connect a DC Voltage supply to TP7 and TE7 through a 100 ohm 1/4W resistor. Adjust the DC voltage to 23 VDC. The receiver should shutdown, losing raster and sound. Then the receiver should turn off automatically. This reaction indicates that the Hold-Down circuit is functioning properly. If the receiver does not shutdown, a malfunction is indicated and its cause **must** be found and corrected.
4. To obtain picture again, remove the DC Supply and wait a few minutes. Now turn on the receiver.

HIGH VOLTAGE CHECK

Note: +B (+130V) Voltage Check and Grayscale Adjustment must be completed before attempting High Voltage Check.

1. Connect high voltage voltmeter negative lead to ground, and connect + lead to anode of picture tube.
2. Tune receiver to an active channel and confirm TV is operating properly.
3. Eliminate the beam current by adjusting the contrast and brightness controls to minimum.
4. Confirm high voltage is within 29.0 KV and 31.0 KV. If reading is not within range, check horizontal circuit.

No high-voltage adjustment is provided on this chassis.

SOUND ADJUSTMENT

1. Connect Voltmeter – lead to ground and + lead IC101 Pin 50 (FM DET OUT).
2. Tune receiver to an active channel.
3. Confirm D.V.M. reading of 3.85 ± 0.2 VDC.
4. If the voltage is out of this range, adjust Sound I.F. Transformer (T131) for 3.85 ± 0.2 VDC.

SERVICE ADJUSTMENTS (Continued)

VIDEO LEVEL

1. Turn off the receiver and disconnect the AC power cord (AC 120V line).
2. Connect oscilloscope to TP16A and ground.
3. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
4. Connect color bar generator to antenna terminals.
5. Select NO. 16 VL (Video Level) with the ▲ or ▼ key.
6. Adjust the + or – key for an oscilloscope reading of $2.0 \pm 0.2\%$ VP-P at TP16A. Press the MENU key to turn off the Service Menu display.

MULTI-SOUND SECTION ADJUSTMENTS

Note: Multi-Sound Section must be adjusted after IC101 (Signal Processor), IC3401 (MTS Decoder), IC802 (EEPROM), or T131 (Sound I.F. transformer) is replaced.

INPUT LEVEL ADJUSTMENT

1. Turn off the receiver and disconnect the AC power cord (AC 120V line).
2. Connect voltmeter (RMS) to TP317 and ground.
3. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
4. Select a channel with audio of 1 KHz 100% modulation.
5. Select NO. 32 ATT (Attenuation) with the ▲ or ▼ key.
6. Adjust the + or – key for a voltmeter reading of $400 \pm 5\%$ mVrms at TP317.

SEPARATION ADJUSTMENT

7. Turn off the receiver and disconnect the AC power cord (AC 120V line).
8. Connect oscilloscope CH1 to TP317 and CH2 to TP318 and ground.
9. Connect an MTSTV/Stereo generator to antenna terminal.
10. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
11. Select pilot, 300Hz audio frequency and Left modulating signal.
12. Select NO. 35 WDB (Wideband) with the ▲ or ▼ key.
13. Adjust the + or – key for minimum low frequencies at TP317. (See Figure 8.)
14. Select 4 KHz audio frequency and Right modulating signal.
15. Select NO. 36 SPC (Spectral) with the ▲ or ▼ key.
16. Adjust the + or – key for minimum high frequencies at TP318. (See Figure 7.)

Repeat adjustments (steps 11–16) until no further decreases in amplitude can be obtained. Press the MENU key to turn off the Service Menu display.

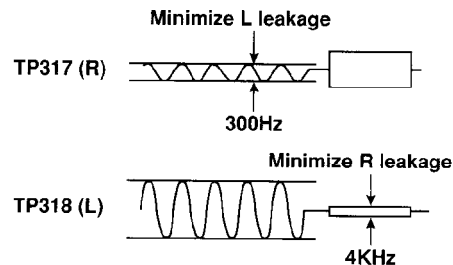


Figure 7. Separation Adjustments

PURITY AND CONVERGENCE ADJUSTMENTS

Purity and Convergence have been aligned at the factory. No re-alignment is necessary.

Figure 7. Filter Adjustment

SERVICE HINTS

POWER FAILURE DETECTOR

This unit is equipped with a Power Failure Detector function included in the CPU which checks for an abnormal condition in the chassis power supplies, including the power supply derived from the Horizontal Output Transformer.

If, while the power is on, a failure is caused by any of the following which results in a low voltage supply, the CPU will turn the unit off in 1.5 seconds to prevent unnecessary damage:

- Failure within the power supply circuits.
- A short circuit in the load side from the supply.
- Stoppage of the Horizontal Output Oscillator caused by the X-Radiation protection Hold-Down Circuit.

If, while the power is off, the power is switched on and any of these failures remains uncorrected, the CPU will shut off the power within 3 seconds.

Check the following if the unit is turned off by the power failure detector.

1. Disconnect the AC power cord (120V AC line) for at least 10 seconds.
2. Connect a DC Voltmeter to the following TEST POINTS.

TJ5	9V
TJ7	7.6V
D312 Cathode	5V
D429 Cathode	5V

3. Press the power key and check for the proper voltage supplies.
4. If any of these voltages is low, the power failure detector should turn the unit off within 3 seconds.
5. Check all circuits listed above.

Note: This unit is equipped with a Power Surge Protection feature included in the CPU. If power failure occurs three times within 15 minutes, the CPU will automatically stop functioning to help prevent secondary damage. (TV will not turn on by pressing the power key.) To reset the operating programs within the CPU, disconnect the AC power cord for at least 10 seconds.

MECHANICAL DISASSEMBLIES

CABINET BACK REMOVAL

1. Refer to Figure 1, remove 12 screws.
2. Pull off cabinet back and remove.

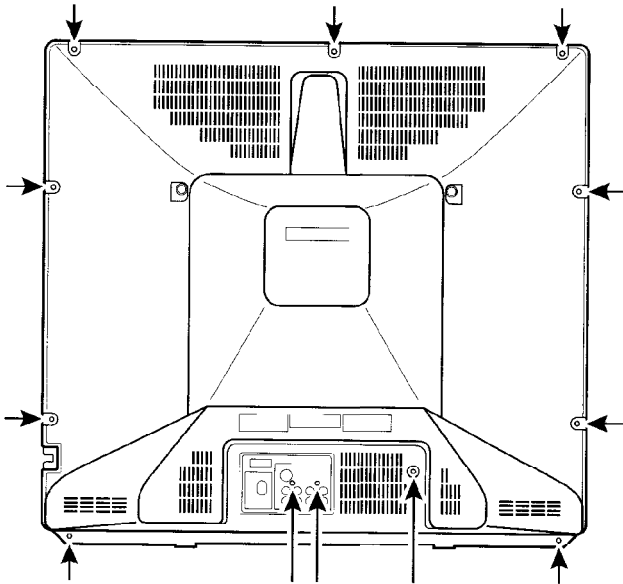


Figure 1. Cabinet Back Removal

CHASSIS REMOVAL

1. Remove cabinet back.
2. Discharge the picture tube anode (2nd anode lead) to the dag coating (picture tube grounding lead).
3. Disconnect degaussing coil socket (KD), picture tube socket, deflection yoke connector (KX), speakers connector (KSP), picture tube ground lead, and 2nd anode lead.
4. Remove chassis completely by sliding it straight back.

PICTURE TUBE REMOVAL

CAUTION: Do not disturb the deflection yoke or magnet assembly on the picture tube neck. Care must be taken to keep these assemblies intact, unless picture tube is being replaced. Discharge the picture tube to the coating before handling the tube.

1. Remove chassis, referring to Chassis Removal instructions.
2. Place cabinet's front face down on a soft surface.
3. Remove the screw on each corner of the picture tube and GENTLY lift the picture tube out of the cabinet.
4. Install a replacement picture tube in reverse order. Properly install the degaussing coil and picture tube grounding lead on the picture tube. See Figure 2.

Note: If Picture Tube is being replaced, mount the Degaussing Coil properly on the tube. See Figure 2.

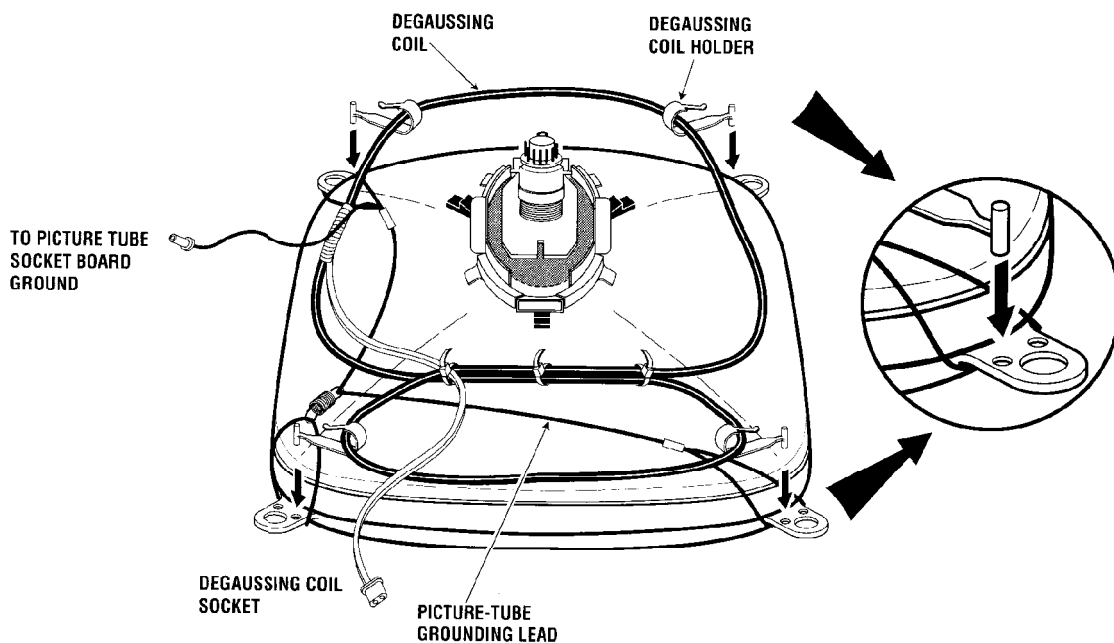


Figure 2. Picture Tube Removal

CHASSIS ELECTRICAL PARTS LIST

CAUTION: To Protect against electrical shock and for continued product safety, refer to **SAFETY PRECAUTIONS**, **X-RADIATION PRECAUTIONS**, **HIGH VOLTAGE HOLD-DOWN TEST**, and **PRODUCT SAFETY NOTICE** on Page 2.

PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A REPLACEMENT IS MADE IN ANY AREA OF A RECEIVER. COMPONENTS INDICATED BY A STAR (★) IN THIS PARTS LIST AND THE SCHEMATIC DIAGRAM DESIGNATE COMPONENTS IN WHICH SAFETY CAN BE OF SPECIAL SIGNIFICANCE. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS DESIGNATED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENT REPLACEMENT DESIGNATED BY A STAR. NO DEVIATIONS FROM RESISTANCE, WATTAGE, AND VOLTAGE RATINGS MAY BE MADE FOR REPLACEMENT ITEMS DESIGNATED BY A STAR.

Notes: Parts having Location Number are located on the following boards.

Numbers under 700 SeriesOn the Main Board.
 Numbers 700 SeriesOn the Picture Tube Socket Board.
 Numbers 800 SeriesOn the Main Board
 Numbers 900 SeriesOut of Board.
 Numbers 1000 SeriesOn the Main Board
 Numbers 1900 seriesOn the Main Board
 Numbers 3400 seriesOn the Main Board

Note: Schematic part location numbers may not always match with the part descriptions.
 The part descriptions are correct and should be used.

Schematic Location	Part No.	Description
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CAPACITORS

NOTES:

Read description of the Capacitor as follows:

(Example)

CERAMIC 100P K 50V
 ————— Rated Voltage
 ————— Tolerance Symbols:
 less than 10PF
 A ..Not specified
 B ..±0.1PF C ..±0.25PF
 D ..±0.5PF F ..±1PF
 G ..±2PF R ..±0.25 - 0PF
 S ..+0 - 0.25PF E ..+0 - 1PF
 more than 10PF
 A ..Not specified
 B ..±0.1% C ..±0.25%
 D ..±0.5% F ..±1%
 G ..±2% H ..±3%
 J ..±5% K ..±10%
 L ..±15% M ..±20%
 N ..±30% P ..+100 - 0%
 Q ..+30 - 10% T ..+50 - 10%
 U ..+75 - 10% V ..+20 - 10%
 W ..+100 - 10% X ..+40 - 20%
 Y ..+150 - 10% Z ..+80 - 20%
 ————— Rated Value: P...Pico Farad U...Micro Farad

Material:

CERAMICCeramic
 MT-PAPERMetalized Paper
 POLYESTERPolyester
 MT-POLYEST ...Metalized Polyester
 POLYPROPolypropylene
 MT-POLYPRO ...Metalized Polypropylene
 COMPO-FILM ...Composite Film
 MT-COMPO ...Metalized Composite
 STYRENEStyrene
 TA-SOLIDTantalum Solid
 AL-SOLIDAluminum Solid
 ELECTElectrolytic
 NP-ELECTNon-Polarized Electrolytic
 OS-SOLIDAluminum Solid with Organic
 Semiconductive Electrolytic

Schematic Location	Part No.	Description
C001	403 049 0008	ELECT 1U M 50V
C002	403 049 0008	ELECT 1U M 50V
C003	403 074 7607	CERAMIC 5600P K 50V
C004	403 074 7607	CERAMIC 5600P K 50V
C010	403 043 0202	ELECT 220U M 16V
C011	403 043 0202	ELECT 220U M 16V
C015	403 044 1703	ELECT 470U M 16V
C016	403 069 9500	CERAMIC 0.01U Z 50V
C018	403 069 9500	CERAMIC 0.01U Z 50V
C101	403 039 3507	ELECT 470U M 6.3V
C103	403 069 9500	CERAMIC 0.01U Z 50V
C106	403 050 6600	ELECT 3.3U M 50V
C108	403 009 5708	CERAMIC 100P J 50V
C109	403 009 5708	CERAMIC 100P J 50V
C131	403 049 0008	ELECT 1U M 50V
C133	403 069 9500	CERAMIC 0.01U Z 50V
C141	403 069 9500	CERAMIC 0.01U Z 50V
C142	403 062 7107	POLYESTER 0.056U K 50V
	403 312 2609	POLYESTER 0.056U K 50V
C143	403 069 9500	CERAMIC 0.01U Z 50V
C147	403 043 9106	ELECT 47U M 16V
C151	403 048 6308	ELECT 0.47U M 50V
C161	403 069 9500	CERAMIC 0.01U Z 50V
C166	403 020 0409	CERAMIC 27P J 50V
C202	403 069 9500	CERAMIC 0.01U Z 50V
C208	403 041 8804	ELECT 10U M 16V
C211	403 049 0008	ELECT 1U M 50V
C212	403 049 9803	ELECT 2.2U M 50V
C221	403 041 8804	ELECT 10U M 16V
C252	403 060 8403	POLYESTER 0.033U K 50V
	403 312 1305	POLYESTER 0.033U K 50V
C253	403 049 9803	ELECT 2.2U M 50V
C256	403 041 4509	ELECT 470U M 10V
C257	403 069 9500	CERAMIC 0.01U Z 50V
C258	403 041 8804	ELECT 10U M 16V
C272	403 050 6600	ELECT 3.3U M 50V

Schematic Location	Part No.	Description
C300	403 069 9500	CERAMIC 0.01U Z 50V
C303	403 070 2606	CERAMIC 0.1U Z 50V
C304	403 043 9106	ELECT 47U M 16V
C306	403 028 4102	CERAMIC 56P J 50V
C307	403 018 0503	CERAMIC 22P J 50V
C308	403 022 8205	CERAMIC 33P J 50V
C309	403 041 8804	ELECT 10U M 16V
C310	403 069 9500	CERAMIC 0.01U Z 50V
C312	403 048 6308	ELECT 0.47U M 50V
C313	403 069 9500	CERAMIC 0.01U Z 50V
C314	403 069 9500	CERAMIC 0.01U Z 50V
C315	403 011 4904	CERAMIC 120P J 50V
C316	403 069 9500	CERAMIC 0.01U Z 50V
C317	403 014 9203	CERAMIC 180P J 50V
C318	403 069 9500	CERAMIC 0.01U Z 50V
C322	403 069 9500	CERAMIC 0.01U Z 50V
C323	403 069 9500	CERAMIC 0.01U Z 50V
C331	403 069 9500	CERAMIC 0.01U Z 50V
C332	403 039 3507	ELECT 470U M 6.3V
C336	403 024 2102	CERAMIC 39P J 50V
C338	403 070 2606	CERAMIC 0.1U Z 50V
C341	403 018 0503	CERAMIC 22P J 50V
C342	403 033 4500	CERAMIC 82P J 50V
C343	403 009 5708	CERAMIC 100P J 50V
C344	403 069 9500	CERAMIC 0.01U Z 50V
C351	403 050 6600	ELECT 3.3U M 50V
C352	403 070 5508	CERAMIC 1200P K 50V
C371	403 048 6308	ELECT 0.47U M 50V
C401	403 052 7308	ELECT 100U M 35V
C403	403 059 6205	POLYESTER 0.022U K 50V
	403 312 0506	POLYESTER 0.022U K 50V
C405	403 051 0607	ELECT 4.7U M 50V
C406	403 076 3607	CERAMIC 470P K 500V
C407	403 076 0507	CERAMIC 2200P K 500V
C408	403 103 0005	ELECT 4.7U M 160V
★ C411	404 077 5003	MT-POLYPRO 8600P H 1.5KV
	403 343 8502	MT-POLYPRO 8600P H 1.5KV
★ C412	404 077 4600	MT-POLYPRO 7800P H 1.5KV
	403 343 8205	MT-POLYPRO 7800P H 1.5KV
★ C413	403 083 4307	POLYPRO 0.022U J 400V
★ C414	403 083 4307	POLYPRO 0.022U J 400V
★ C416	404 081 2609	MT-POLYPRO 0.27U M 200V
	403 346 7126	MT-POLYPRO 0.27U J 250V
★ C417	404 081 2302	MT-POLYPRO 0.2U M 200V
	403 346 6822	MT-POLYPRO 0.2U J 250V
C419	403 158 9107	MT-POLYEST 2.2U K 100V
C421	403 038 6301	ELECT 220U M 6.3V
C426	403 039 3507	ELECT 470U M 6.3V
C461	403 044 6609	ELECT 10U M 25V
C462	403 043 9106	ELECT 47U M 16V
C466	403 047 3100	ELECT 47U M 25V
C470	403 166 7706	MT-POLYEST 0.47U J 63V
	403 067 7805	MT-COMPO 0.47U J 50V
C482	403 115 0703	ELECT 47U M 100V
C484	403 051 0607	ELECT 4.7U M 50V
C486	403 076 3607	CERAMIC 470P K 500V
C487	403 052 8503	ELECT 1000U M 35V
C489	403 044 1703	ELECT 470U M 16V
C493	404 056 5307	NP-ELECT 2.2U M 100V

Schematic Location	Part No.	Description
C497	403 039 6508	ELECT 100U M 10V
C502	403 053 2104	ELECT 220U M 35V
C503	403 204 1802	ELECT 3.3U K 50V
C504	403 045 9807	ELECT 2200U M 25V
C505	403 166 8000	MT-POLYEST 0.33U J 63V
	403 067 7300	MT-COMPO 0.33U J 50V
C506	403 059 0104	POLYESTER 0.018U K 50V
	403 312 0100	POLYESTER 0.018U K 50V
C509	403 166 7706	MT-POLYEST 0.47U J 63V
	403 067 7805	MT-COMPO 0.47U J 50V
C511	403 057 2100	POLYESTER 0.1U J 50V
	403 311 8800	POLYESTER 0.1U J 50V
	403 057 3107	POLYESTER 0.1U K 50V
	403 311 8909	POLYESTER 0.1U K 50V
C516	403 041 8804	ELECT 10U M 16V
★ C601	404 071 2404	MT-POLYEST 0.22U M 250V
	404 066 2204	MT-POLYEST 0.22U M 275V
★ C608	403 247 3702	CERAMIC 3300P K 1K
	403 271 9701	CERAMIC 3300P K 1K
	403 276 0307	CERAMIC 3300P K 1K
C609	404 075 5005	ELECT 470U M 200V
C612	403 166 8208	MT-POLYEST 0.18U J 63V
	403 067 6501	MT-COMPO 0.18U J 50V
C613	403 214 5203	POLYESTER 0.012U J 50V
	403 311 9203	POLYESTER 0.012U J 50V
C620	403 057 2100	POLYESTER 0.1U J 50V
	403 311 8800	POLYESTER 0.1U J 50V
	403 057 3107	POLYESTER 0.1U K 50V
	403 311 8909	POLYESTER 0.1U K 50V
C622	403 044 1703	ELECT 470U M 16V
★ C625	403 266 5008	CERAMIC 2700P K 1K
	403 232 0402	CERAMIC 2700P K 1K
C626	403 043 1902	ELECT 2200U M 16V
C628	404 073 9005	ELECT 220U M 160V
C629	403 043 0202	ELECT 220U M 16V
C630	403 049 0008	ELECT 1U M 50V
★ C632	404 008 6802	CERAMIC 2200P M 125V
	404 046 5003	CERAMIC 2200P M 125V
	404 073 4604	CERAMIC 2200P M 250V
C634	403 043 9106	ELECT 47U M 16V
C683	403 038 6301	ELECT 220U M 6.3V
C688	403 042 2405	ELECT 100U M 16V
C689	403 070 2606	CERAMIC 0.1U Z 50V
C693	403 049 0008	ELECT 1U M 50V
C701	403 075 4803	CERAMIC 820P K 50V
C711	403 074 9502	CERAMIC 680P K 50V
C721	403 075 4803	CERAMIC 820P K 50V
C741	403 049 0008	ELECT 1U M 50V
★ C742	403 077 2807	CERAMIC 1000P Z 2K
C801	403 069 9500	CERAMIC 0.01U Z 50V
C806	403 039 3507	ELECT 470U M 6.3V
C811	403 049 0008	ELECT 1U M 50V
C822	403 041 8804	ELECT 10U M 16V
C829	403 049 0008	ELECT 1U M 50V
C831	403 076 5304	CERAMIC 680P K 500V
C832	403 062 0504	POLYESTER 0.047U K 50V
	403 312 2203	POLYESTER 0.047U K 50V
C835	403 069 9500	CERAMIC 0.01U Z 50V
C841	403 069 9500	CERAMIC 0.01U Z 50V

Schematic Location	Part No.	Description
C842	403 069 9500	CERAMIC 0.01U Z 50V
C843	403 069 9500	CERAMIC 0.01U Z 50V
C853	403 047 8402	ELECT 0.1U M 50V
C854	403 011 4904	CERAMIC 120P J 50V
C856	403 049 0008	ELECT 1U M 50V
C857	403 018 7403	CERAMIC 220P J 50V
C858	403 069 1702	CERAMIC 1000P K 50V
C862	403 069 9500	CERAMIC 0.01U Z 50V
C884	403 009 5708	CERAMIC 100P J 50V
C1000	403 069 9500	CERAMIC 0.01U Z 50V
C1001	403 041 8804	ELECT 10U M 16V
C1002	403 042 7707	ELECT 22U M 16V
C1005	403 070 2606	CERAMIC 0.1U Z 50V
C1006	403 041 8804	ELECT 10U M 16V
C1011	403 069 9500	CERAMIC 0.01U Z 50V
C1081	403 043 9106	ELECT 47U M 16V
C1082	403 069 9500	CERAMIC 0.01U Z 50V
C1902	403 041 8804	ELECT 10U M 16V
C1910	403 069 9500	CERAMIC 0.01U Z 50V
C3401	403 047 8402	ELECT 0.1U M 50V
C3404	403 086 0108	NP-ELECT 4.7U M 25V
C3406	403 070 6703	CERAMIC 0.012U K 50V
C3407	403 074 7607	CERAMIC 5600P K 50V
C3408	403 048 6308	ELECT 0.47U M 50V
C3411	403 048 6308	ELECT 0.47U M 50V
C3412	403 043 9106	ELECT 47U M 16V
C3413	403 046 9905	ELECT 4.7U M 25V
C3414	403 042 2405	ELECT 100U M 16V
C3416	403 086 0108	NP-ELECT 4.7U M 25V
C3417	403 046 9905	ELECT 4.7U M 25V
C3418	403 086 0108	NP-ELECT 4.7U M 25V
C3421	403 072 5605	CERAMIC 2700P K 50V
C3422	403 130 3109	CERAMIC 0.047U K 50V
C3423	403 342 9203	TA-SOLID 3.3U K 10V
C3424	403 086 0108	NP-ELECT 4.7U M 25V
C3426	403 299 1820	TA-SOLID 10U K 10V
C3427	403 049 0008	ELECT 1U M 50V
C3431	403 073 9107	CERAMIC 4700P K 50V
C3432	403 047 8402	ELECT 0.1U M 50V
C3433	403 073 9107	CERAMIC 4700P K 50V
C3434	403 072 1607	CERAMIC 0.022U K 50V
C3435	403 046 9905	ELECT 4.7U M 25V
C3436	403 086 0108	NP-ELECT 4.7U M 25V
C3437	403 046 9905	ELECT 4.7U M 25V
C3439	403 086 0108	NP-ELECT 4.7U M 25V
C3446	403 046 9905	ELECT 4.7U M 25V
C3448	403 046 9905	ELECT 4.7U M 25V
DIODES		
D101	407 100 0204	ZENER DIODE MTZJ36A (36V)
	407 056 2307	ZENER DIODE RD36EB1 (36V)
D102	407 063 8903	ZENER DIODE MTZJ5.6C (5.6V)
	407 057 0104	ZENER DIODE RD5.6EB3 (5.6V)
D311	407 099 5006	ZENER DIODE MTZJ4.7A (4.7V)
	407 056 7906	ZENER DIODE RD5.1EB1 (5.1V)
D312	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473

Schematic Location	Part No.	Description
D351	407 099 6607	ZENER DIODE MTZJ12B (12V)
	407 063 8408	ZENER DIODE MTZJ12C (12V)
	407 054 3207	ZENER DIODE RD12EB2 (12V)
	407 054 3306	ZENER DIODE RD12EB3 (12V)
D406	407 006 4108	DIODE ERB44-04
D407	407 095 8001	DIODE ERD07-15L
★ D421	407 158 1307	ZENER DIODE HZ11B2L (11.2V)
★ D422	407 158 1307	ZENER DIODE HZ11B2L (11.2V)
D428	407 099 7208	ZENER DIODE MTZJ16A (16V)
	407 054 7007	ZENER DIODE RD16EB1 (16V)
D429	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D463	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D481	407 124 6404	DIODE ERA18-04
	407 007 6606	DIODE ES1
	407 124 5506	DIODE RMPG06G
D482	407 011 4407	DIODE TVR1G
D483	407 124 6404	DIODE ERA18-04
	407 007 6606	DIODE ES1
	407 124 5506	DIODE RMPG06G
D486	407 099 6102	ZENER DIODE MTZJ10B (10V)
	407 054 0008	ZENER DIODE RD10EB2 (10V)
D487	407 005 8602	DIODE ERA15-02
	407 088 6502	DIODE MPG06D
	407 011 3004	DIODE S5277B
	408 009 9404	DIODE 1N4002ID
D489	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D493	407 063 9306	ZENER DIODE MTZJ7.5C (7.5V)
	407 057 6502	ZENER DIODE RD7.5EB3 (7.5V)
D501	407 005 8602	DIODE ERA15-02
	407 088 6502	DIODE MPG06D
	407 011 3004	DIODE S5277B
	408 009 9404	DIODE 1N4002ID
D503	407 100 0204	ZENER DIODE MTZJ36A (36V)
	407 056 2307	ZENER DIODE RD36EB1 (36V)
★ D601	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
★ D602	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
★ D603	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
★ D604	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
D609	407 124 6503	DIODE ERA18-02
	407 007 6903	DIODE ES1Z
	407 124 5605	DIODE RMPG06D
	408 009 9008	DIODE BYD33D
D610	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473

Schematic Location	Part No.	Description
D611	407 099 5808	ZENER DIODE MTZJ7.5A (7.5V)
	407 057 6304	ZENER DIODE RD7.5EB1 (7.5V)
★ D612	407 147 5705	PHOTO COUPLE ON3131S
	407 104 2402	PHOTO COUPLE PC817C
★ D612 (Cont.)	407 106 6101	PHOTO COUPLE PC817D
	407 175 9904	PHOTO COUPLE TLP621-1-BL
D614	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
★ D621	407 007 7603	DIODE EU2
★ D624	407 211 6102	DIODE FE301-1L43
	407 129 6706	DIODE RU4YX LF-L1
★ D625	407 211 5808	DIODE FE201-6L43
	407 129 7000	DIODE RU4AM LF-L1
D627	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D629	407 099 7208	ZENER DIODE MTZJ16A (16V)
	407 054 7007	ZENER DIODE RD16EB1 (16V)
D680	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D683	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D687	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D693	407 099 5402	ZENER DIODE MTZJ6.2B (6.2V)
	407 057 2702	ZENER DIODE RD6.2EB2 (6.2V)
D694	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D801	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D831	407 065 1308	ZENER DIODE MTZJ3.6B (3.6V)
	407 056 4707	ZENER DIODE RD4.3EB2 (4.3V)
D834	407 099 8007	ZENER DIODE MTZJ20C (20V)
	407 055 1905	ZENER DIODE RD20EB3 (20V)
D836	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D843	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D1001	407 099 6102	ZENER DIODE MTZJ10B (10V)
	407 054 0008	ZENER DIODE RD10EB2 (10V)
D1002	407 099 6102	ZENER DIODE MTZJ10B (10V)
	407 054 0008	ZENER DIODE RD10EB2 (10V)
D1006	407 099 6102	ZENER DIODE MTZJ10B (10V)
	407 054 0008	ZENER DIODE RD10EB2 (10V)
D1008	407 065 1308	ZENER DIODE MTZJ3.6B (3.6V)
	407 056 4707	ZENER DIODE RD4.3EB2 (4.3V)
D1009	407 065 1308	ZENER DIODE MTZJ3.6B (3.6V)
	407 056 4707	ZENER DIODE RD4.3EB2 (4.3V)
D1011	407 099 6102	ZENER DIODE MTZJ10B (10V)
	407 054 0008	ZENER DIODE RD10EB2 (10V)

Schematic Location	Part No.	Description
D1901	407 063 9306	ZENER DIODE MTZJ7.5C (7.5V)
	407 057 6502	ZENER DIODE RD7.5EB3 (7.5V)

INTEGRATED CIRCUITS

IC002	409 275 7903	IC LA4525
★ IC101	409 431 2100	IC LA76170N
IC301	409 406 1107	IC TC90A44P
★ IC501	409 340 1904	IC LA7841
★ IC601	409 172 8102	IC SE130NH
IC681	409 241 8309	IC TA78L05S
	409 066 7303	IC UPC78L05J
IC801	410 354 9503	IC M37272M8- FP T
IC802	409 470 3304	IC KS24C021C
	409 376 1503	IC ST24C02B6
	409 333 3700	IC 24LC02B/P
IC1081	409 051 3006	IC TC4053BP
IC3401	409 467 1108	IC CXA2134Q-T6

COILS

★ LF601	645 012 0589	LINE FILTER
	645 026 8274	LINE FILTER
L164	645 003 9713	INDUCTOR, 15U K
	645 016 2657	INDUCTOR, 15U K
L166	645 003 9812	INDUCTOR, 33U K
	645 016 2985	INDUCTOR, 33U K
L305	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L306	645 003 9782	INDUCTOR, 22U K
	645 016 2831	INDUCTOR, 22U K
L309	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L310	610 078 5946	PIPE CORE
	652 000 1725	PIPE CORE
L312	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L332	645 003 9713	INDUCTOR, 15U K
	645 016 2657	INDUCTOR, 15U K
L341	645 008 2924	INDUCTOR, 8.2U K
	645 016 3227	INDUCTOR, 8.2U K
L401	645 017 7675	INDUCTOR, 3.3U, FILTER
L402	610 031 9998	PIPE CORE
L403	610 078 6820	PIPE CORE
★ L413	645 025 4406	COIL, LINEARITY
	645 029 8035	COIL, LINEARITY
L414	610 031 1367	INDUCTOR 202J
	610 211 3488	INDUCTOR
L416	645 013 8676	INDUCTOR, 350U
L601	610 078 6820	PIPE CORE
L621	610 078 5946	PIPE CORE
	652 000 1725	PIPE CORE
L623	610 078 5946	PIPE CORE
	652 000 1725	PIPE CORE
L625	610 078 5946	PIPE CORE
	652 000 1725	PIPE CORE
L801	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K

Schematic Location	Part No.	Description
L813	645 006 2490	INDUCTOR, 1U K
	645 016 2411	INDUCTOR, 1U K
L814	645 006 2490	INDUCTOR, 1U K
	645 016 2411	INDUCTOR, 1U K
L821	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L851	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L881	645 006 2490	INDUCTOR, 1U K
	645 016 2411	INDUCTOR, 1U K
L882	645 006 2490	INDUCTOR, 1U K
	645 016 2411	INDUCTOR, 1U K
★ L901	645 030 7430	COIL, DEGAUSSING
	645 041 1830	COIL, DEGAUSSING
L1901	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K

TRANSISTORS

Q001	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
Q005	405 008 4805	TR 2SB764-E
	405 008 4904	TR 2SB764-F
Q101	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
Q135	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
Q202	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O

Schematic Location	Part No.	Description
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
Q216	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
Q222	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
Q225	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 151 3304	TR 2SA608NF-NPA
	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
Q301	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
Q306	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA

Schematic Location	Part No.	Description
Q307	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 151 3304	TR 2SA608NF-NPA
	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
Q332	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 151 3304	TR 2SA608NF-NPA
	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
Q341	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
Q342	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
Q343	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
Q371	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
Q372	405 020 7907	TR 2SC945A-RA
	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 151 3304	TR 2SA608NF-NPA
	405 006 1707	TR 2SA933S-Q

Schematic Location	Part No.	Description
Q401	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 151 3304	TR 2SA608NF-NPA
	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
	405 013 6207	TR 2SC2271-D-CTV
	405 013 6306	TR 2SC2271-E-CTV
★ Q402	405 082 2407	TR 2SD1879-CTV-YB
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
Q461	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 064 7307	TR 2SB1274-Q-RA
	405 064 7406	TR 2SB1274-R-RA
	405 023 5009	TR 2SD400-E-MP
	405 023 5306	TR 2SD400-F-MP
	405 095 9004	TR 2SC4423-CTV
	405 058 0208	TR 2SC3807-R-CTV-YA
Q462	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 151 3304	TR 2SA608NF-NPA
	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
Q486	405 089 0000	TR 2SA1707-S
	405 089 0109	TR 2SA1707-T
	405 009 6907	TR 2SB985-S
	405 009 7003	TR 2SB985-T
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
★ Q601	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
Q604	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
Q605	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
Q627	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
Q635	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
Q681	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA

Schematic Location	Part No.	Description
Q688	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3208	TR 2SA564A-R(CU)
	405 151 3304	TR 2SA608NF-NPA
	405 006 1806	TR 2SA933S-R
Q693	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
Q695	405 011 8401	TR 2SC945A-RA
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3208	TR 2SA564A-R(CU)
	405 004 4809	TR 2SA608-F-CTV-NP
	405 000 3605	TR 2SC3620(LB-SAN-1)
Q701	405 066 4304	TR 2SC2621-C-RA
	405 041 6507	TR 2SC2621-D-RA
	405 041 6705	TR 2SC2621-E-RA
	405 066 9903	TR 2SC2688(1)-K
	405 067 0008	TR 2SC2688(1)-L
Q711	405 067 0107	TR 2SC2688(1)-M
	406 000 3605	TR 2SC3620(LB-SAN-1)
	405 066 4304	TR 2SC2621-C-RA
	405 041 6507	TR 2SC2621-D-RA
	405 041 6705	TR 2SC2621-E-RA
Q721	405 066 9903	TR 2SC2688(1)-K
	405 067 0008	TR 2SC2688(1)-L
	405 067 0107	TR 2SC2688(1)-M
	406 000 3605	TR 2SC3620(LB-SAN-1)
	405 066 4304	TR 2SC2621-C-RA
Q831	405 041 6507	TR 2SC2621-D-RA
	405 041 6705	TR 2SC2621-E-RA
	405 066 9903	TR 2SC2688(1)-K
	405 067 0008	TR 2SC2688(1)-L
	405 067 0107	TR 2SC2688(1)-M
Q881	406 000 6804	TR 2SA1015-GR(SAN)
	405 001 7407	TR 2SA1015-O(SAN)
	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3109	TR 2SA564A-Q(CU)
	405 004 3208	TR 2SA564A-R(CU)
	405 151 3304	TR 2SA608NF-NPA
	405 006 1707	TR 2SA933S-Q
	405 006 1806	TR 2SA933S-R
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
Q882	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
Q1071	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA

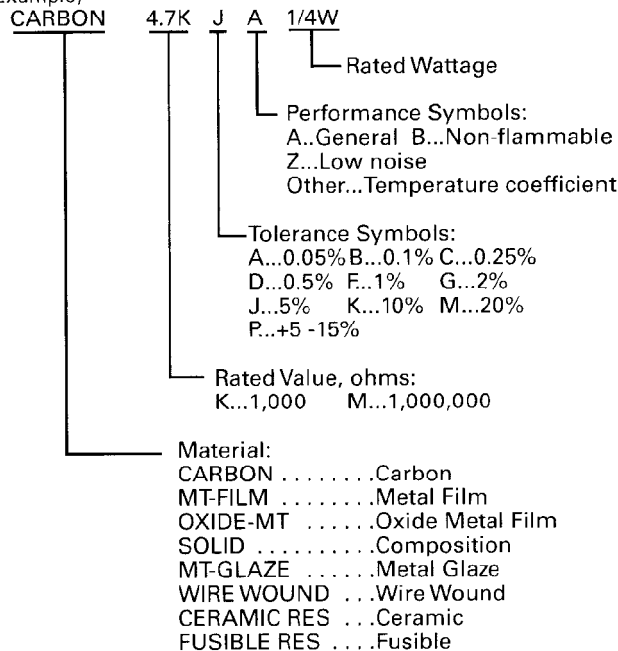
Schematic Location	Part No.	Description
Q882	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
Q1071	405 020 7907	TR 2SC945A-RA
	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA

RESISTORS

NOTES:

Read description of the Resistor as follows:

(Example)



R001	401 027 8602	CARBON	8.2K JA	1/6W
R002	401 027 8602	CARBON	8.2K JA	1/6W
R003	401 025 4200	CARBON	1.8K JA	1/6W
R004	401 025 4200	CARBON	1.8K JA	1/6W
R005	401 037 5608	MT-GLAZE	10K JA	1/10W
R006	401 023 1706	CARBON	820 JA	1/4W
R012	401 027 2600	CARBON	5.6K JA	1/6W
R101	401 026 6609	CARBON	390 JA	1/6W

Schematic Location	Part No.	Description
★ R104	401 009 4806	CARBON 33 JA 1/2W
R105	401 011 1107	CARBON 68 JA 1/2W
R106	401 009 2000	CARBON 27K JA 1/2W
R133	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R136	401 027 8305	CARBON 820 JA 1/6W
R137	401 038 9001	MT-GLAZE 680 JA 1/10W
R138	401 037 5202	MT-GLAZE 100 JA 1/10W
R142	401 038 3702	MT-GLAZE 33K JA 1/10W
R143	401 037 5400	MT-GLAZE 1K JA 1/10W
R151	401 025 1308	CARBON 150 JA 1/6W
R159	401 025 7409	CARBON 220 JA 1/6W
R161	401 037 9408	MT-GLAZE 180K JA 1/10W
R162	401 038 0909	MT-GLAZE 220K JA 1/10W
R163	401 038 0602	MT-GLAZE 220 JA 1/10W
R164	401 024 7004	CARBON 1K JA 1/6W
R167	401 025 2305	CARBON 150K JA 1/6W
R168	401 038 2309	MT-GLAZE 270K JA 1/10W
R169	401 037 5400	MT-GLAZE 1K JA 1/10W
R202	401 024 7004	CARBON 1K JA 1/6W
R206	401 024 6700	CARBON 100 JA 1/6W
R207	401 037 5400	MT-GLAZE 1K JA 1/10W
R212	401 037 5806	MT-GLAZE 1M JA 1/10W
R216	401 037 5608	MT-GLAZE 10K JA 1/10W
R217	401 027 5908	CARBON 68K JA 1/6W
R221	401 037 5202	MT-GLAZE 100 JA 1/10W
R222	401 037 5400	MT-GLAZE 1K JA 1/10W
R223	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R224	401 038 3504	MT-GLAZE 330 JA 1/10W
R225	401 038 3504	MT-GLAZE 330 JA 1/10W
R251	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R252	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R271	401 038 0800	MT-GLAZE 22K JA 1/10W
R272	401 038 3603	MT-GLAZE 3.3K JA 1/10W
R273	401 037 5608	MT-GLAZE 10K JA 1/10W
R276	401 037 6803	MT-GLAZE 12K JA 1/10W
R281	401 026 4308	CARBON 3.3K JA 1/6W
R287	401 037 5202	MT-GLAZE 100 JA 1/10W
R288	401 037 5202	MT-GLAZE 100 JA 1/10W
R289	401 037 5202	MT-GLAZE 100 JA 1/10W
R301	401 037 5400	MT-GLAZE 1K JA 1/10W
R302	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R303	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R304	401 037 5400	MT-GLAZE 1K JA 1/10W
R305	401 037 5202	MT-GLAZE 100 JA 1/10W
R306	401 024 7004	CARBON 1K JA 1/6W
R307	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R308	401 037 5400	MT-GLAZE 1K JA 1/10W
R309	401 027 5205	CARBON 680 JA 1/6W
★ R310	401 010 2501	CARBON 47 JA 1/2W
★ R311	401 010 2501	CARBON 47 JA 1/2W
R312	401 039 0304	MT-GLAZE 820 JA 1/10W
R332	401 038 9001	MT-GLAZE 680 JA 1/10W
R333	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R334	401 024 7004	CARBON 1K JA 1/6W
R341	401 024 7004	CARBON 1K JA 1/6W
R342	401 024 7004	CARBON 1K JA 1/6W
R343	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R347	401 037 5608	MT-GLAZE 10K JA 1/10W
R348	401 037 5608	MT-GLAZE 10K JA 1/10W

Schematic Location	Part No.	Description
R349	401 024 7004	CARBON 1K JA 1/6W
R351	401 026 9600	CARBON 470 JA 1/6W
R352	401 038 0909	MT-GLAZE 220K JA 1/10W
R353	401 024 7400	CARBON 10K JA 1/6W
R371	401 037 5608	MT-GLAZE 10K JA 1/10W
R372	401 038 3702	MT-GLAZE 33K JA 1/10W
R373	401 038 9407	MT-GLAZE 680K JA 1/10W
R376	401 038 7809	MT-GLAZE 56K JA 1/10W
R377	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R400	401 038 3801	MT-GLAZE 330K JA 1/10W
R401	401 017 0807	CARBON 270 JA 1/4W
R403	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R404	401 026 3905	CARBON 330 JA 1/6W
R406	401 010 8305	CARBON 5.6K JA 1/2W
★ R407	401 068 4700	OXIDE-MT 4.7K JA 2W
R409	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
★ R413	402 067 3305	WIRE WOUND 4.7 KA 5W
	402 075 5704	WIRE WOUND 4.7 KA 5W
★ R418	401 009 1607	CARBON 2.7K JB 1/2W
★ R421	401 148 7201	MT-FILM 1.8K FA 1/6W
★ R422	401 052 6802	MT-FILM 10K FA 1/6W
★ R423	401 053 2605	MT-FILM 3.3K FA 1/6W
R426	401 038 9001	MT-GLAZE 680 JA 1/10W
R428	401 025 1902	CARBON 15K JA 1/6W
R460	401 024 9008	CARBON 120 JA 1/6W
R461	401 025 7409	CARBON 220 JA 1/6W
R467	401 010 8305	CARBON 5.6K JA 1/2W
R468	401 027 5205	CARBON 680 JA 1/6W
R471	401 027 5205	CARBON 680 JA 1/6W
R473	401 027 3003	CARBON 56K JA 1/6W
R474	401 025 4903	CARBON 180K JA 1/6W
R475	401 027 5205	CARBON 680 JA 1/6W
R480	401 009 0006	CARBON 27 JB 1/2W
★ R481	401 009 4905	CARBON 33 JB 1/2W
★ R482	401 011 9004	CARBON 1 JB 1/4W
★ R483	401 006 7701	CARBON 1 JB 1/2W
R485	401 037 9309	MT-GLAZE 18K JA 1/10W
★ R486	401 065 1801	OXIDE-MT 12 JA 2W
R487	401 026 6609	CARBON 390 JA 1/6W
★ R489	401 065 9609	OXIDE-MT 18 JA 2W
R491	401 012 5708	CARBON 1K JA 1/4W
R492	401 097 3903	MT-FILM 39K FA 1/6W
R493	401 018 5801	CARBON 330K JA 1/4W
R494	401 018 5801	CARBON 330K JA 1/4W
★ R497	401 064 5305	OXIDE-MT 1.5 JA 2W
★ R498	401 011 4306	CARBON 8.2 JA 1/2W
R503	401 027 2600	CARBON 5.6K JA 1/6W
R504	401 027 5502	CARBON 6.8K JA 1/6W
R505	401 006 8401	CARBON 1.5 JA 1/2W
R506	401 027 5205	CARBON 680 JA 1/6W
R507	401 006 8807	CARBON 1.8 JA 1/2W
R508	401 024 9701	CARBON 12K JA 1/6W
R509	401 027 5502	CARBON 6.8K JA 1/6W
★ R511	401 060 7402	OXIDE-MT 270 JA 1W
R517	401 025 4606	CARBON 18K JA 1/6W
R518	401 025 4606	CARBON 18K JA 1/6W
★ R601	402 064 2905	WIRE WOUND 1 KA 7W
	402 072 3000	WIRE WOUND 1 KA 7W
★ R602	402 000 0705	SOLID 3.3M KA 1/2W

Schematic Location	Part No.	Description
R603	401 007 2309	CARBON 100K JA 1/2W
★ R604	401 064 6302	OXIDE-MT 10 JA 2W
★ R613	401 068 6902	OXIDE-MT 56 JA 2W
R614	401 011 1107	CARBON 68 JA 1/2W
R615	401 014 5201	CARBON 15K JA 1/4W
R616	401 026 2809	CARBON 3K GA 1/6W
R617	401 099 1501	CARBON 680 GA 1/6W
★ R618	401 068 6902	OXIDE-MT 56 JA 2W
R619	401 025 8208	CARBON 22K JA 1/6W
R620	401 027 2600	CARBON 5.6K JA 1/6W
R621	401 026 9907	CARBON 4.7K JA 1/6W
R622	401 026 2809	CARBON 3K GA 1/6W
R627	401 037 5608	MT-GLAZE 10K JA 1/10W
R628	401 013 5301	CARBON 1.2K JA 1/4W
R629	401 024 7004	CARBON 1K JA 1/6W
★ R630	401 060 5002	OXIDE-MT 22K JA 1W
R631	401 022 3107	CARBON 6.8K JA 1/4W
R632	401 024 7004	CARBON 1K JA 1/6W
R634	401 027 0309	CARBON 47K JA 1/6W
R683	401 026 9907	CARBON 4.7K JA 1/6W
R686	401 016 1508	CARBON 22 JA 1/4W
R687	401 025 8208	CARBON 22K JA 1/6W
R688	401 037 6803	MT-GLAZE 12K JA 1/10W
R691	401 024 7400	CARBON 10K JA 1/6W
R692	401 027 5908	CARBON 68K JA 1/6W
R693	401 027 3201	CARBON 560K JA 1/6W
R694	401 024 7400	CARBON 10K JA 1/6W
R695	401 025 8208	CARBON 22K JA 1/6W
R701	401 025 3807	CARBON 180 JA 1/6W
R702	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R703	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R704	401 027 8107	CARBON 82 JA 1/6W
R706	401 009 1508	CARBON 2.7K JA 1/2W
★ R707	401 065 4604	OXIDE-MT 12K JA 2W
R711	401 025 3807	CARBON 180 JA 1/6W
R712	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R713	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R714	401 039 0205	MT-GLAZE 82 JA 1/10W
R716	401 009 1508	CARBON 2.7K JA 1/2W
★ R717	401 065 4604	OXIDE-MT 12K JA 2W
R721	401 025 3807	CARBON 180 JA 1/6W
R722	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R723	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R724	401 027 8107	CARBON 82 JA 1/6W
R726	401 009 1508	CARBON 2.7K JA 1/2W
★ R727	401 065 4604	OXIDE-MT 12K JA 2W
R803	401 037 5202	MT-GLAZE 100 JA 1/10W
R804	401 037 5202	MT-GLAZE 100 JA 1/10W
R806	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R807	401 037 5608	MT-GLAZE 10K JA 1/10W
R808	401 037 5608	MT-GLAZE 10K JA 1/10W
R809	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R810	401 024 7400	CARBON 10K JA 1/6W
R813	401 037 5608	MT-GLAZE 10K JA 1/10W
R814	401 037 5608	MT-GLAZE 10K JA 1/10W
R816	401 038 3504	MT-GLAZE 330 JA 1/10W
R821	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R822	401 037 9101	MT-GLAZE 180 JA 1/10W
R823	401 024 9701	CARBON 12K JA 1/6W

Schematic Location	Part No.	Description
R826	401 038 6406	MT-GI A7F 4.7K JA 1/10W
R827	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R828	401 026 4605	CARBON 33K JA 1/6W
R831	401 037 5707	MT-GLAZE 100K JA 1/10W
R833	401 024 7400	CARBON 10K JA 1/6W
R835	401 026 1000	CARBON 2.7K JA 1/6W
R842	401 027 2303	CARBON 560 JA 1/6W
R843	401 027 2303	CARBON 560 JA 1/6W
R844	401 027 2303	CARBON 560 JA 1/6W
R846	401 037 5400	MT-GLAZE 1K JA 1/10W
R847	401 027 2600	CARBON 5.6K JA 1/6W
R848	401 027 2600	CARBON 5.6K JA 1/6W
R849	401 027 2600	CARBON 5.6K JA 1/6W
R851	401 037 5400	MT-GLAZE 1K JA 1/10W
R852	401 038 5300	MT-GLAZE 39K JA 1/10W
R853	401 037 5806	MT-GLAZE 1M JA 1/10W
R854	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R856	401 037 5202	MT-GLAZE 100 JA 1/10W
R857	401 037 5202	MT-GLAZE 100 JA 1/10W
R859	401 037 5608	MT-GLAZE 10K JA 1/10W
R862	401 024 6700	CARBON 100 JA 1/6W
R864	401 038 5300	MT-GLAZE 39K JA 1/10W
R872	401 025 1902	CARBON 15K JA 1/6W
R873	401 038 0800	MT-GLAZE 22K JA 1/10W
R881	401 037 5202	MT-GLAZE 100 JA 1/10W
R882	401 037 5202	MT-GLAZE 100 JA 1/10W
R883	401 024 6700	CARBON 100 JA 1/6W
R884	401 024 6700	CARBON 100 JA 1/6W
R886	401 024 7400	CARBON 10K JA 1/6W
R1001	401 027 8107	CARBON 82 JA 1/6W
R1002	401 027 8107	CARBON 82 JA 1/6W
R1003	401 037 5608	MT-GLAZE 10K JA 1/10W
R1004	401 038 2200	MT-GLAZE 27K JA 1/10W
R1006	401 026 9600	CARBON 470 JA 1/6W
R1007	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R1011	401 027 6608	CARBON 75 JA 1/6W
R1012	401 038 2200	MT-GLAZE 27K JA 1/10W
R1013	401 024 9701	CARBON 12K JA 1/6W
R1071	401 038 6307	MT-GLAZE 470 JA 1/10W
R1081	401 025 8208	CARBON 22K JA 1/6W
R1082	401 038 0800	MT-GI A7F 22K JA 1/10W
R1901	401 024 7400	CARBON 10K JA 1/6W
R1902	401 024 7004	CARBON 1K JA 1/6W
R1903	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R1904	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1905	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R1906	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R1907	401 037 6803	MT-GLAZE 12K JA 1/10W
R1909	401 024 7004	CARBON 1K JA 1/6W
R1910	401 024 7004	CARBON 1K JA 1/6W
R3401	401 038 0602	MT-GLAZE 220 JA 1/10W
R3402	401 038 0602	MT-GLAZE 220 JA 1/10W
R3406	401 037 5707	MT-GLAZE 100K JA 1/10W
R3407	401 037 5806	MT-GLAZE 1M JA 1/10W
R3411	401 152 9604	MT-GLAZE 62K FA 1/10W
R3421	401 038 3603	MT-GLAZE 3.3K JA 1/10W
R3422	401 038 3009	MT-GI A7F 3K JA 1/10W
R3426	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R3432	401 037 5608	MT-GLAZE 10K JA 1/10W

Schematic Location	Part No.	Description
R3433	401 037 5608	MT-GLAZE 10K JA 1/10W
R3434	401 038 7601	MT-GLAZE 560 JA 1/10W
R3435	401 037 5707	MT-GLAZE 100K JA 1/10W
R3436	401 038 7601	MT-GLAZE 560 JA 1/10W
R3437	401 037 5707	MT-GLAZE 100K JA 1/10W
R3445	401 038 3801	MT-GLAZE 330K JA 1/10W
R3446	401 037 5202	MT-GLAZE 100 JA 1/10W
R3447	401 038 3801	MT-GLAZE 330K JA 1/10W
R3448	401 037 5202	MT-GLAZE 100 JA 1/10W

SWITCHES

SW1901	645 027 7382	SWITCH, PUSH (POWER)
SW1902	645 027 7382	SWITCH, PUSH (VOL +)
SW1903	645 027 7382	SWITCH, PUSH (VOL -)
SW1904	645 027 7382	SWITCH, PUSH (CH ▲)
SW1905	645 027 7382	SWITCH, PUSH (CH ▼)
SW1906	645 027 7382	SWITCH, PUSH (MENU)

TRANSFORMERS

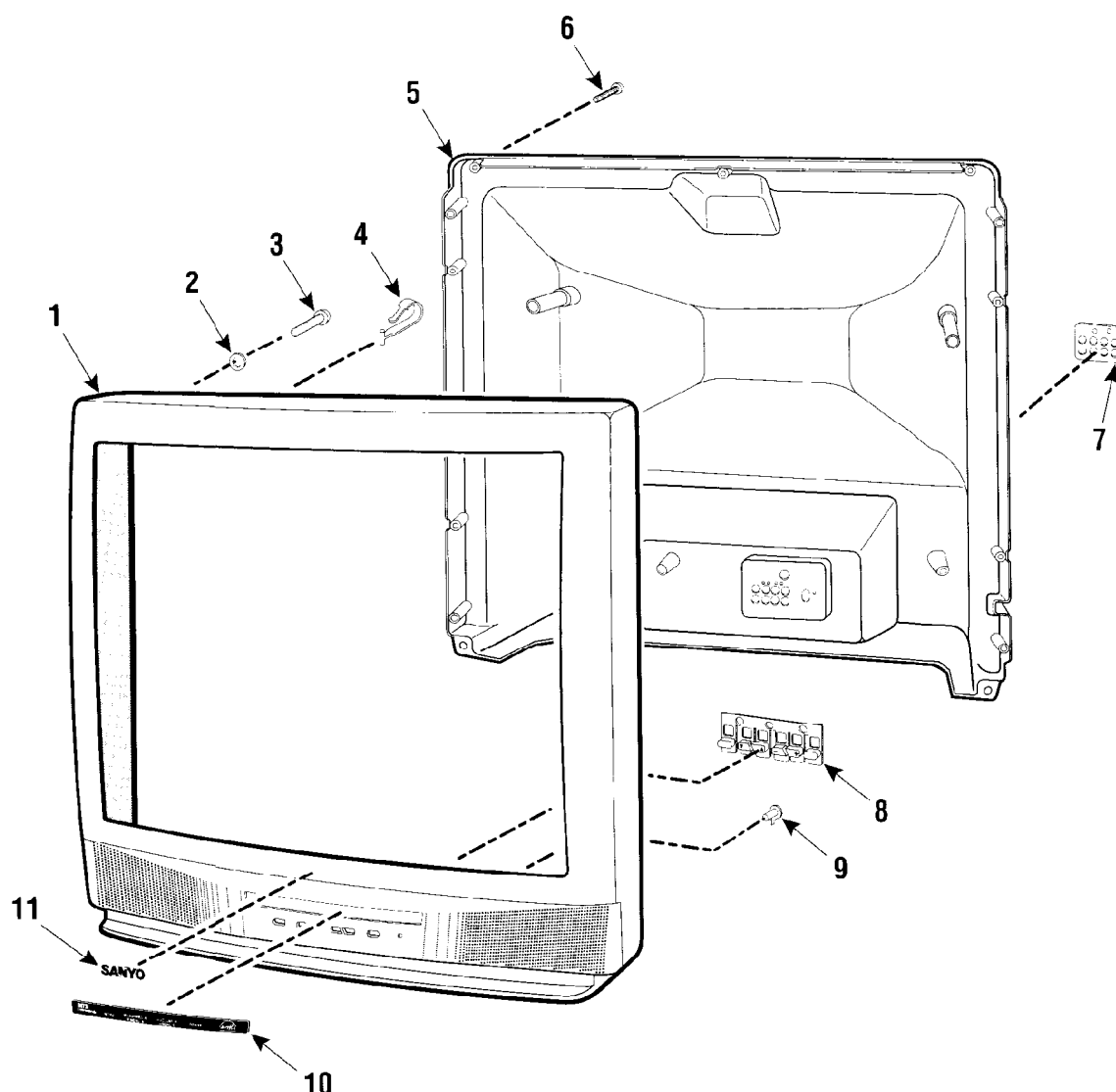
T131	645 027 6095	TRANS, IF 4.5MHZ
T151	645 027 6088	TRANS, OSC 45.75MHZ
T401	610 000 1138	DRIVE TRANS
	610 223 1663	DRIVE TRANS
★ T402	645 032 8978	TRANS, FLYBACK
	645 018 9579	TRANS, FLYBACK
★ T601	645 035 9910	TRANS, POWER, PULSE
	645 040 1527	TRANS, POWER, PULSE

CRYSTAL/FILTERS

X141	421 006 3206	SAW F TSF5221P
	421 008 9008	SAW F TSF5235P
X153	610 015 2946	CERAMIC FILTER 4.5MHZ
	645 030 1049	CERAMIC FILTER 4.5MHZ
	645 041 1656	CERAMIC FILTER 4.5MHZ
X161	610 015 3059	TRAP, CERAMIC 4.5MHZ
	645 041 1618	TRAP, CERAMIC 4.5MHZ
X251	610 204 4195	CRYSTAL OSCILLATOR
	610 245 9746	CRYSTAL OSCILLATOR
	610 012 0655	CRYSTAL OSCILLATOR
X401	645 020 9147	OSC, CERAMIC 507.5KHZ
	645 033 1596	OSC, CERAMIC 503KHZ
X801	645 000 6692	OSC, CERAMIC 8.00MHZ
	645 021 5483	OSC, CERAMIC 8.00MHZ

Schematic Location	Part No.	Description
MISCELLANEOUS		
A100	610 284 7147	ASSY, PWB, MAIN
★ A101	645 040 5150	TUNER, U/V
A700	610 281 9472	ASSY, PWB, SOCKET
A1000	610 281 9441	ASSY, PWB, AV
A1901	645 027 4213	UNIT, REMOCON RECEIVER
★ F601	423 018 8101	FUSE 125V 4A
	423 007 1601	FUSE 125V 4A
	423 007 1809	FUSE 125V 4A
F601A	645 000 5077	HOLDER, FUSE
	645 016 0479	HOLDER, FUSE
F601B	645 000 5077	HOLDER, FUSE
	645 016 0479	HOLDER, FUSE
★ K701	645 025 6103	SOCKET, CRT 8P
K1001	645 032 1979	JACK, RCA-3
K1011	610 010 3665	JACK, RCA
K1021	610 010 3672	JACK, RCA
K1051	610 010 8295	SOCKET, DIN 4P
★ PS601	408 038 5606	THERMISTOR PTH451A300BG3
	408 041 8205	THERMISTOR PTH451A3R0Q11
★ Q900	414 010 6103	CRT M78JUA361X71
★ RL601	645 000 4155	RELAY
	645 011 2713	RELAY
	645 024 7828	RELAY
	645 015 8629	RELAY
	645 024 7767	RELAY
SP901	645 013 6306	SPEAKER, 8
SP902	645 013 6306	SPEAKER, 8
VR461	645 003 5531	VR, SEMI,10K N (H-WIDTH)
	645 011 6988	VR, SEMI,10K N
	645 019 6003	VR, SEMI,10K N
★ W601	645 034 8518	CORD, POWER
★ W900	610 264 8362	ASSY, WIRE GND CONNECTOR
	610 267 0325	ASSY, WIRE GND CONNECTOR

CABINET PARTS LIST



CABINET PARTS LIST

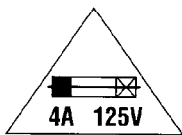
KEY NO.	PARTS NO.	DESCRIPTION
1	610 275 0027	CABINET FRONT ASSY
OR	610 280 8599	CABINET FRONT ASSY
2A	610 268 9679	CRT MTG WASHER 2.5MM (2 TOP)
2B	610 268 9655	CRT MTG WASHER 2.0MM (2 BTM)
3	412 053 3905	CRT MTG SCREW 6X35 (4 USED)
4	610 102 7151	DC HOLDER (4 USED)
5	610 281 9625	CABINET BACK
OR	610 281 4163	CABINET BACK
6	412 036 1805	SCREW 4X14 (12 USED)
OR	411 078 1101	SCREW 4X14 (12 USED)
7	610 283 6806	DEC AV SHEET
8	610 275 4049	BUTTON UNIT
9	610 265 3786	CAP RC
10	610 276 6349	DEC SHEET
11	610 236 9274	SANYO BADGE

ACCESSORY PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
	610 282 3325	OWNER'S MANUAL
	645 040 2845	RC TRANSMITTER
	610 278 3186	RC BATTERY COVER

COMPONENT AND TESTPOINT LOCATIONS

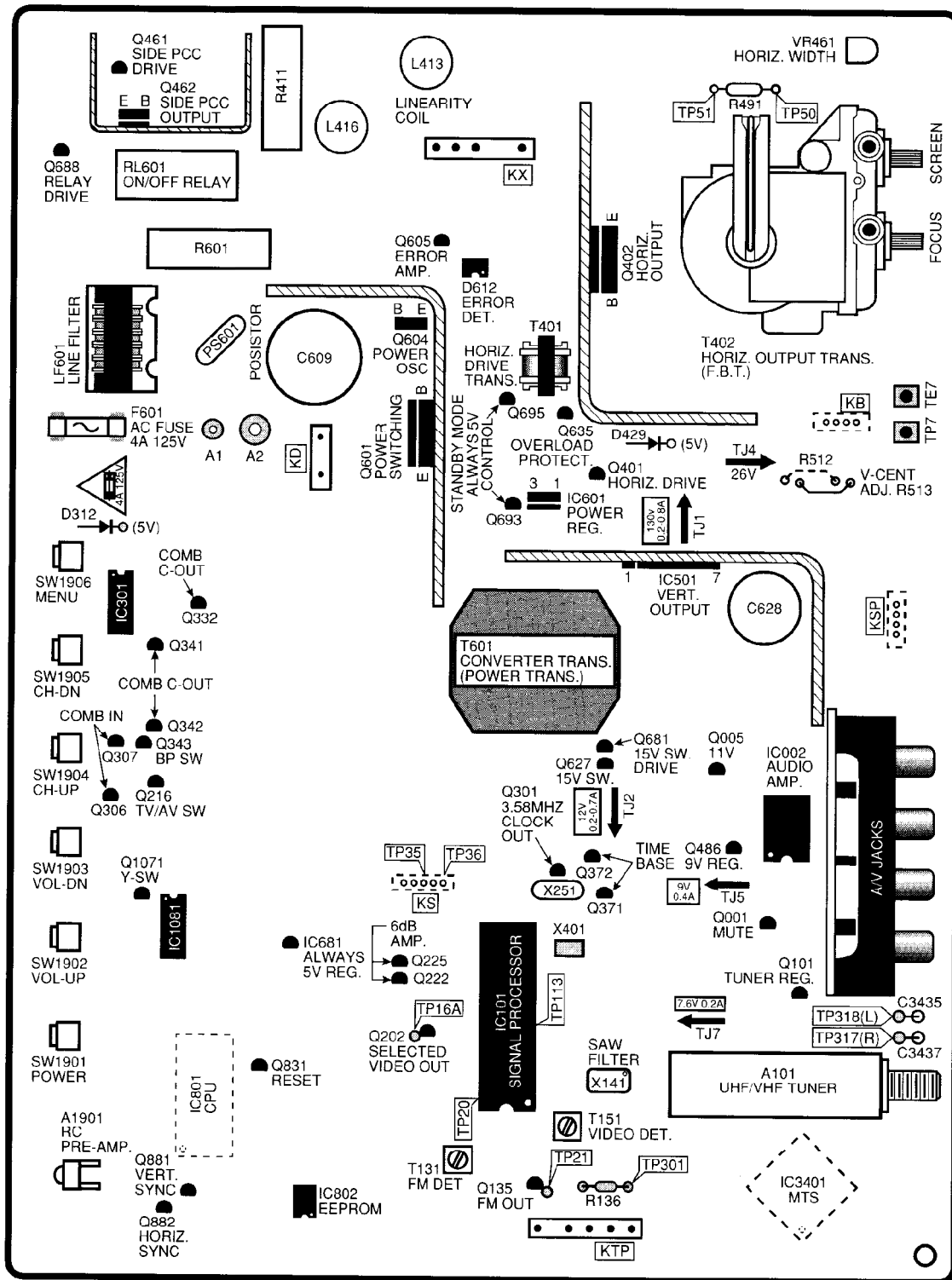
CAUTION



**FOR CONTINUED PROTECTION AGAINST
A RISK OF FIRE, REPLACE ONLY WITH THE
SAME TYPE 4A, 125V FUSE.**

ATTENTION : POUR MAINTENIR LA PROTECTION CONTRE LES RISQUES D'INCENDIE UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE 4A, 125V.

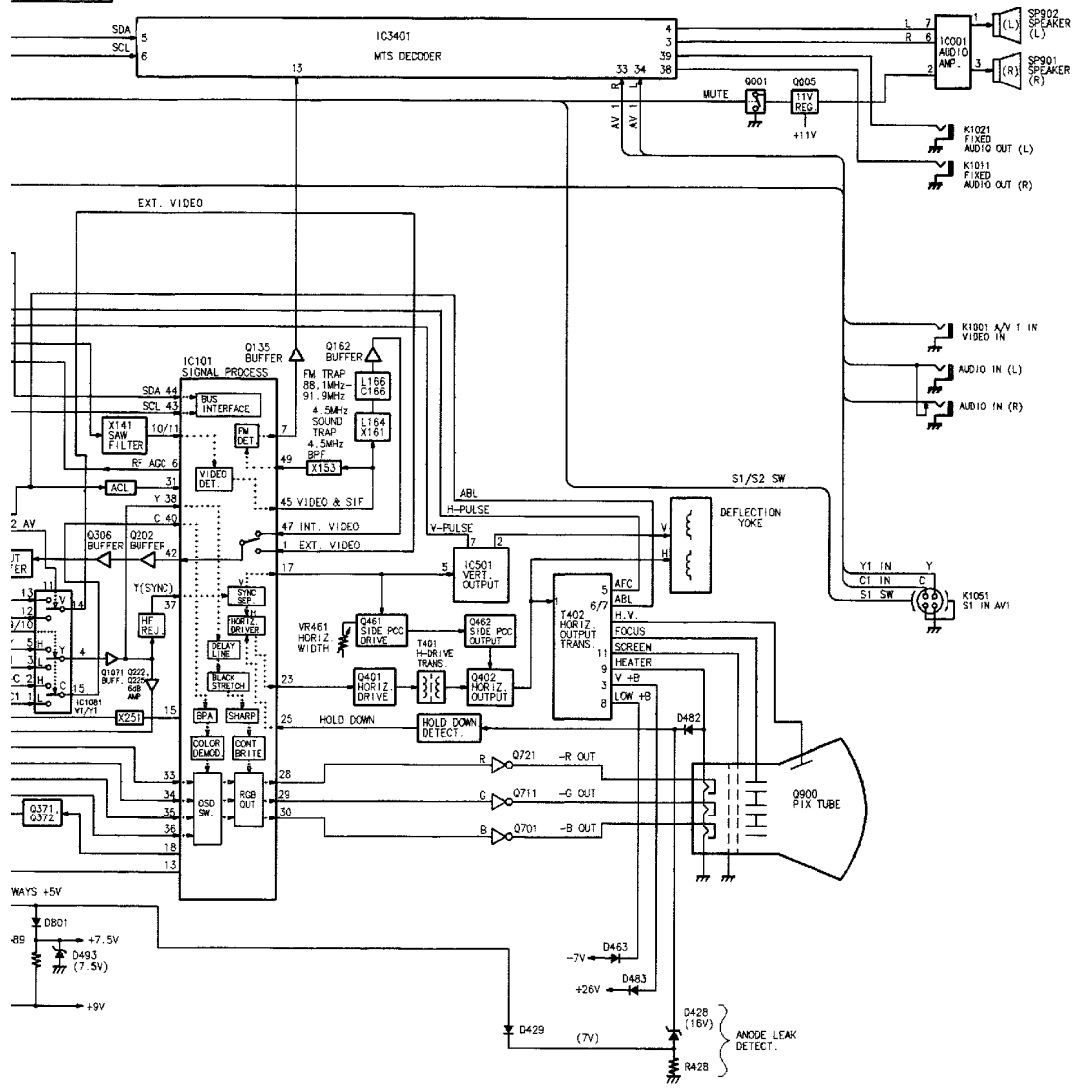
MAIN BOARD



VOLTAGE CHARTS

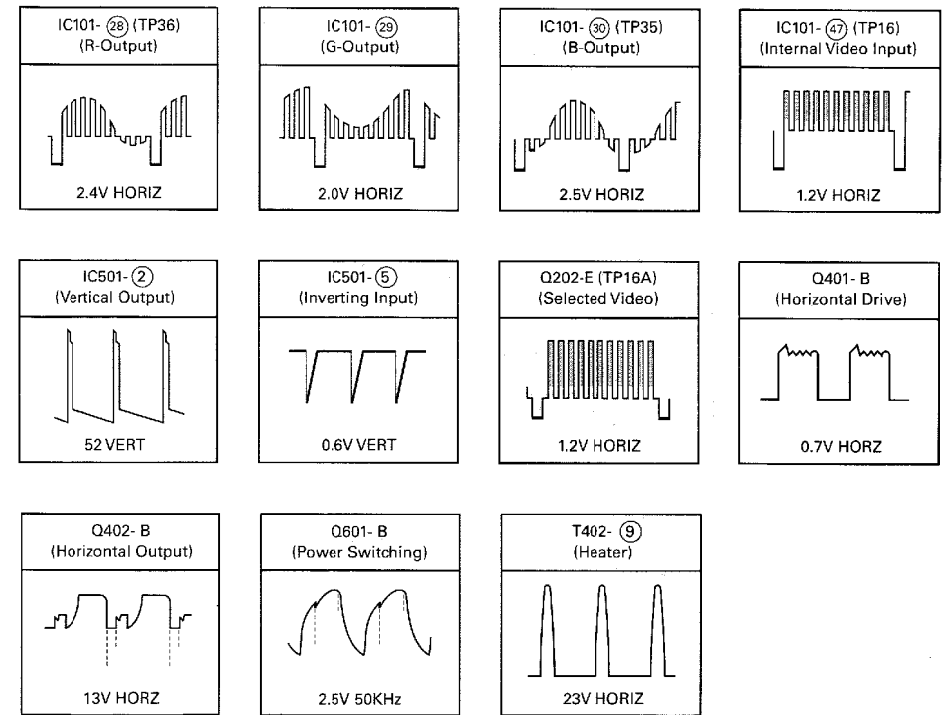
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ITH

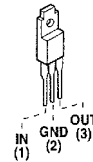
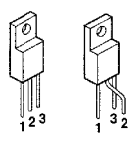
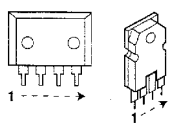
ROTECTION
UTILISER UN
E 4A, 125V.



WAVEFORMS

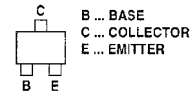
NOTE: Waveforms were taken with color bar signal and the controls adjusted for normal picture.





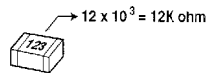
CHIP TRANSISTORS

TOP VIEW

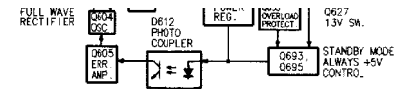


CHIP RESISTORS

TOP VIEW



K...CATHODE

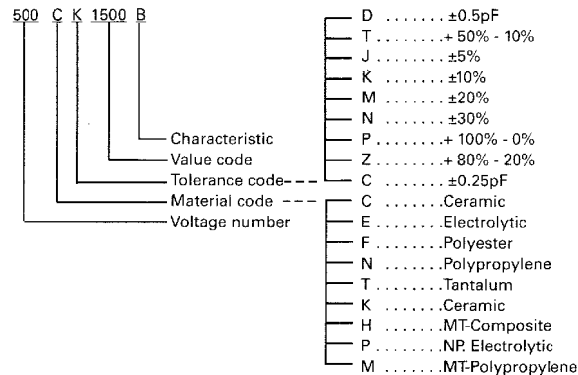


VOLTAGE CHARTS

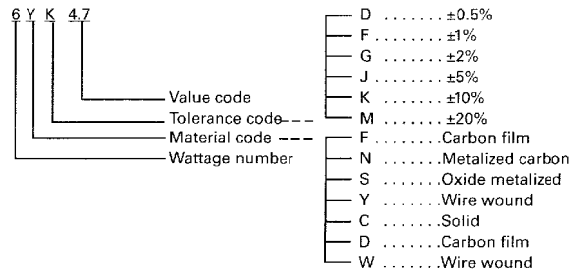
NOTE: Voltages were measured using color bar signal and the controls adjusted for normal picture.

CAPACITOR AND RESISTOR CODE CHART

CAPACITOR (Example)



RESISTOR (Example)

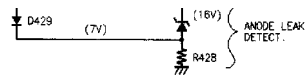


Device/Pin #	Volts/Mode	
D612-1	POWER ON: 31.6	POWER OFF: N/A
D612-2	POWER ON: 30.7	POWER OFF: N/A
D612-3	POWER ON: -3	POWER OFF: 0.6
D612-4	POWER ON: 7.5	POWER OFF: 1.1
IC002-1	7.7	
IC002-2	11.0	
IC002-3	7.7	
IC002-4	GND	
IC002-5	N.C.	
IC002-6	1.4	
IC002-7	1.4	
IC002-8	GND	
IC101-1	1.6	
IC101-2	6.8	
IC101-3	6.8	
IC101-4	7.6	
IC101-5	3.9	
IC101-6	1.7	
IC101-7	3.4	
IC101-8	1.3	
IC101-9	GND	
IC101-10	3.8	
IC101-11	3.8	
IC101-12	5.0	
IC101-13	3.4	
IC101-14	5.8	
IC101-15	4.0	
IC101-16	3.5	
IC101-17	3.8	
IC101-18	6.2	
IC101-19	4.6	
IC101-20	GND	
IC101-21	7.5	
IC101-22	5.2	
IC101-23	0.6	
IC101-24	0.8	
IC101-25	0	
IC101-26	7.6	
IC101-27	GND	
IC101-28	2.8	
IC101-29	2.7	
IC101-30	2.8	
IC101-31	4.8	
IC101-32	7.6	
IC101-33	3.5	
IC101-34	3.5	
IC101-35	3.5	

Device/Pin #	Volts/Mode	
IC101-36	0.4	
IC101-37	5.1	
IC101-38	3.5	
IC101-39	3.6	
IC101-40	3.3	
IC101-41	3.2	
IC101-42	4.2	
IC101-43	3.3	
IC101-44	3.3	
IC101-45	3.5	
IC101-46	GND	
IC101-47	4.3	
IC101-48	3.9	
IC101-49	2.5	
IC101-50	3.8	
IC101-51	N.C.	
IC101-52	4.6	
IC301-1	GND	
IC301-2	2.2	
IC301-3	2.7	
IC301-4	2.2	
IC301-5	1.3	
IC301-6	0	
IC301-7	0	
IC301-8	4.9	
IC301-9	0	
IC301-10	2.2	
IC301-11	2.2	
IC301-12	3.4	
IC301-13	3.7	
IC301-14	1.8	
IC301-15	2.7	
IC301-16	4.9	
IC501-1	GND	
IC501-2	14.4	
IC501-3	27.1	
IC501-4	3.8	
IC501-5	3.8	
IC501-6	26.2	
IC501-7	2.8	
IC601-1	GND	
IC601-2	POWER ON: 30.7	POWER OFF: N/A
IC601-3	POWER ON: 129	POWER OFF: 74.7
IC681-1 (IN)	POWER ON: 11.6	POWER OFF: 7.3
IC681-2	GND	
IC681-3 (OUT)	POWER ON: 5.0	POWER OFF: 5.0

Device/Pin #	Volts/Mode	
IC801-1	4.1	
IC801-2	4.73	
IC801-3	4.9	
IC801-4	0	
IC801-5	0	
IC801-6	0	
IC801-7	0	
IC801-8	TV: 0	AV: 4.4
IC801-9	0	
IC801-10	5.0	
IC801-11	0.2	
IC801-12	4.8	
IC801-13	0.3	
IC801-14	5.0	
IC801-15	2.1	
IC801-16	0.2	
IC801-17	2.2	
IC801-18	GND	
IC801-19	2.2	
IC801-20	2.0	
IC801-21	GND	
IC801-22	5.0	
IC801-23	N.C.	
IC801-24	GND	
IC801-25	5.0	
IC801-26	3.5	
IC801-27	POWER ON: 4.9	POWER OFF: 0
IC801-28	1.7	
IC801-29	2.1	
IC801-30	0	
IC801-31	4.9	
IC801-32	3.4	
IC801-33	4.9	
IC801-34	3.6	
IC801-35	5.0	
IC801-36	5.0	
IC801-37	5.0	
IC801-38	GND	
IC801-39	0.3	
IC801-40	0	
IC801-41	0	
IC801-42	0	
IC802-1	GND	
IC802-2	GND	
IC802-3	GND	
IC802-4	GND	
IC802-5	4.9	
IC802-6	4.9	
IC802-7	GND	
IC802-8	5.0	

Device/Pin #	Volts/Mode	
IC101-36	0.4	
IC101-37	5.1	
IC101-38	3.5	
IC101-39	3.6	
IC101-40	3.3	
IC101-41	3.2	
IC101-42	4.2	
IC101-43	3.3	
IC101-44	3.3	
IC101-45	3.5	
IC101-46	GND	
IC101-47	4.3	
IC101-48	3.9	
IC101-49	2.5	
IC101-50	3.8	
IC101-51	N.C.	
IC101-52	4.6	
IC301-1	GND	
IC301-2	2.2	
IC301-3	2.7	
IC301-4	2.2	
IC301-5	1.3	
IC301-6	0	
IC301-7	0	
IC301-8	4.9	
IC301-9	0	
IC301-10	2.2	
IC301-11	2.2	
IC301-12	3.4	
IC301-13	3.7	
IC301-14	1.8	
IC301-15	2.7	
IC301-16	4.9	
IC501-1	GND	
IC501-2	14.4	
IC501-3	27.1	
IC501-4	3.8	
IC501-5	3.8	
IC501-6	26.2	
IC501-7	2.8	
IC601-1	GND	
IC601-2	POWER ON: 30.7	POWER OFF: N/A
IC601-3	POWER ON: 129	POWER OFF: 74.7
IC681-1 (IN)	POWER ON: 11.6	POWER OFF: 7.3
IC681-2	GND	
IC681-3 (OUT)	POWER ON: 5.0	POWER OFF: 5.0



Volts/Mode	
4.1	
4.73	
4.9	
0	
0	
0	
TV: 0	AV: 4.4
0	
5.0	
0.2	
4.8	
0.3	
5.0	
2.1	
0.2	
2.2	
GND	
2.2	
2.0	
GND	
5.0	
N.C.	
GND	
5.0	
3.5	
POWER ON:	POWER OFF:
4.9	0
1.7	
2.1	
0	
4.9	
3.4	
4.9	
3.6	
5.0	
5.0	
5.0	
GND	
0.3	
0	
0	
0	
GND	
GND	
GND	
GND	
4.9	
4.9	
GND	
5.0	

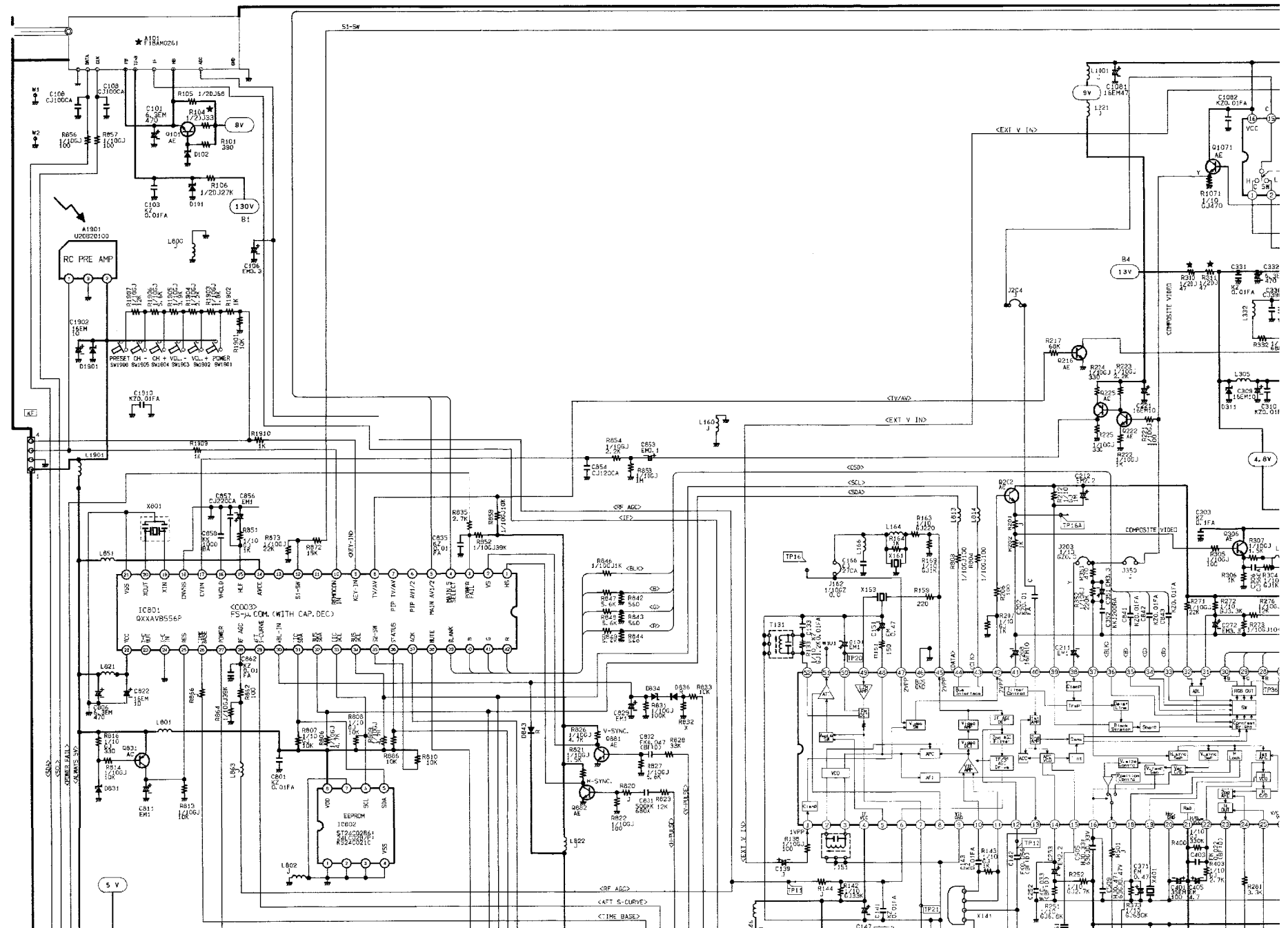
Device/Pin #	Volts/Mode
IC1081-1	6.2
IC1081-2	1.7
IC1081-3	2.7
IC1081-4	2.6
IC1081-5	2.6
IC1081-6	GND
IC1081-7	GND
IC1081-8	GND
IC1081-9	0
IC1081-10	0
IC1081-11	0
IC1081-12	2.7
IC1081-13	2.4
IC1081-14	2.7
IC1081-15	1.7
IC1081-16	9.1
IC3401-1	4.1
IC3401-2	4.1
IC3401-3	4.1
IC3401-4	4.1
IC3401-5	3.4
IC3401-6	3.3
IC3401-7	GND
IC3401-8	4.1
IC3401-9	4.1
IC3401-10	4.1
IC3401-11	4.1
IC3401-12	4.9
IC3401-13	4.1
IC3401-14	1.3
IC3401-15	1.3
IC3401-16	0
IC3401-17	GND
IC3401-18	3.6
IC3401-19	9.1
IC3401-20	0
IC3401-21	4.1
IC3401-22	4.1
IC3401-23	3.7
IC3401-24	4.0
IC3401-25	4.1
IC3401-26	4.1
IC3401-27	4.1
IC3401-28	1.9
IC3401-29	4.1
IC3401-30	4.1
IC3401-31	2.0
IC3401-32	4.1
IC3401-33	4.1
IC3401-34	4.1
IC3401-35	4.1

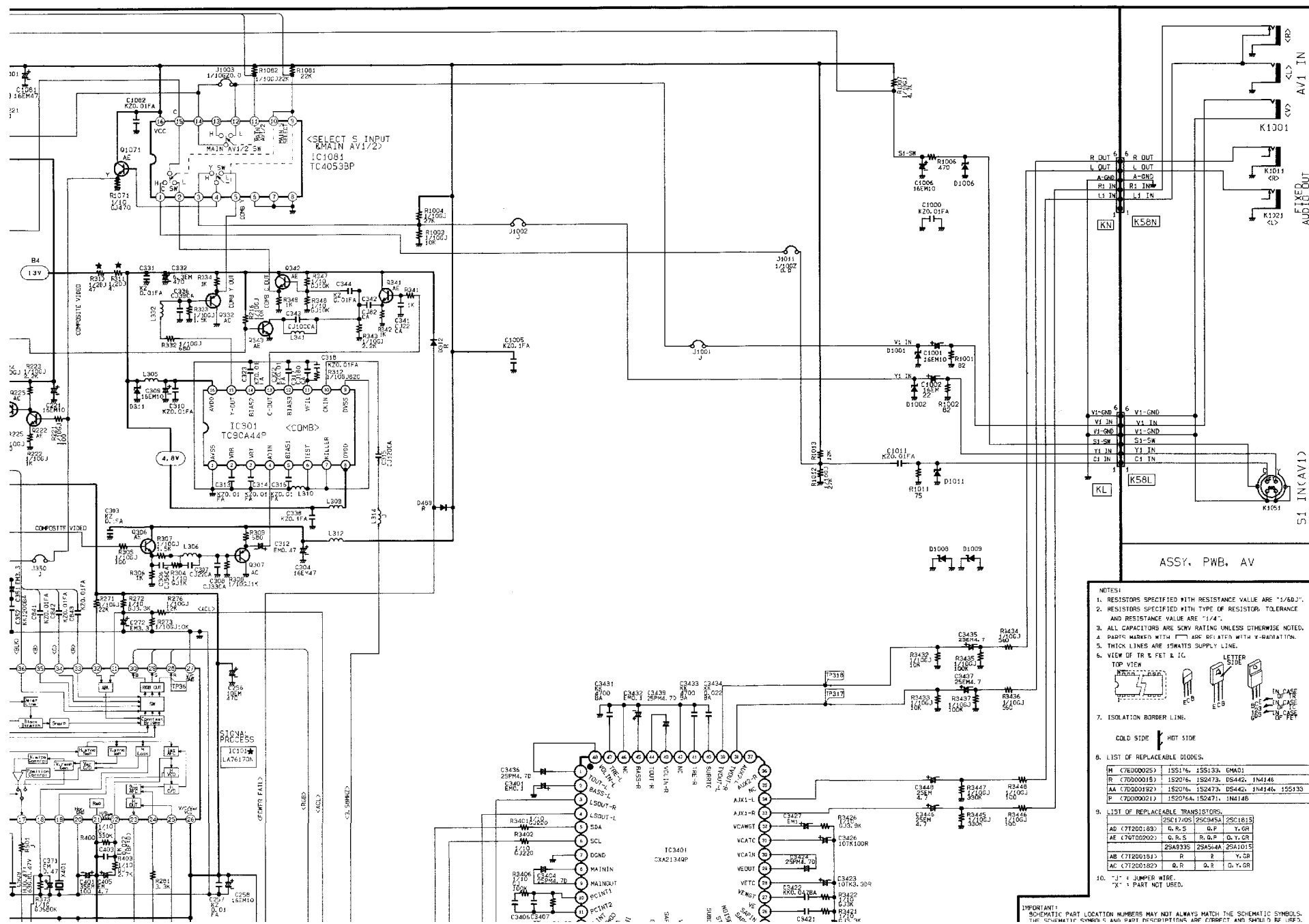
Device/Pin #	Volts/Mode
IC3401-36	4.1
IC3401-37	4.1
IC3401-38	4.1
IC3401-39	4.1
IC3401-40	4.1
IC3401-41	4.1
IC3401-42	GND
IC3401-43	4.1
IC3401-44	4.1
IC3401-45	4.1
IC3401-46	GND
IC3401-47	4.1
IC3401-48	4.1
Q001-B	POWER ON: 0 POWER OFF: 0.7
Q001-C	POWER ON: 7.7 POWER OFF: 0
Q001-E	GND
Q005-B	10.3
Q005-C	11.0
Q005-E	11.0
Q101-B	5.7
Q101-C	6.9
Q101-E	5.0
Q135-B	3.6
Q135-C	7.6
Q135-E	3.0
Q202-B	4.2
Q202-C	7.6
Q202-E	3.5
Q216-B	TV:0 AV: 0.6
Q216-C	TV:0.7 AV: 0
Q216-E	GND
Q222-B	1.9
Q222-C	6.1
Q222-E	1.3
Q225-B	6.1
Q225-C	2.1
Q225-E	6.8
Q301-B	0.6
Q301-C	4.1
Q301-E	GND
Q306-B	3.5
Q306-C	9.1
Q306-E	2.9
Q307-B	1.1
Q307-C	GND
Q307-E	1.8
Q332-B	2.1
Q332-C	GND
Q332-E	2.7

Device/Pin #	Volts/Mode
Q341-B	3.7
Q341-C	4.8
Q341-E	2.9
Q342-B	2.4
Q342-C	4.8
Q342-E	1.8
Q343-B	TV: 0.7 AV: 0
Q343-C	TV: 0 AV: 0
Q343-E	GND
Q371-B	6.1
Q371-C	GND
Q371-E	3.5
Q372-B	3.0
Q372-C	3.5
Q372-E	3.5
Q401-B	0.4
Q401-C	37.3
Q401-E	GND
Q402-B	3.8
Q402-C	128.4
Q402-E	3.8
Q461-B	0.6
Q461-C	9.2
Q461-E	GND
Q462-B	9.2
Q462-C	GND
Q462-E	9.8
Q486-B	9.9
Q486-C	10.1
Q486-E	9.1
Q601-B	POWER ON: -0.3 POWER OFF: 0
Q601-C	POWER ON: 161.4 POWER OFF: 169.6
Q601-E	GND
Q604-B	POWER ON: -1.6 POWER OFF: 0.6
Q604-C	POWER ON: -0.3 POWER OFF: 0
Q604-E	GND
Q605-B	POWER ON: 7.7 POWER OFF: 1.2
Q605-C	POWER ON: -0.3 POWER OFF: 0.6
Q605-E	POWER ON: 8.1 POWER OFF: 1.8

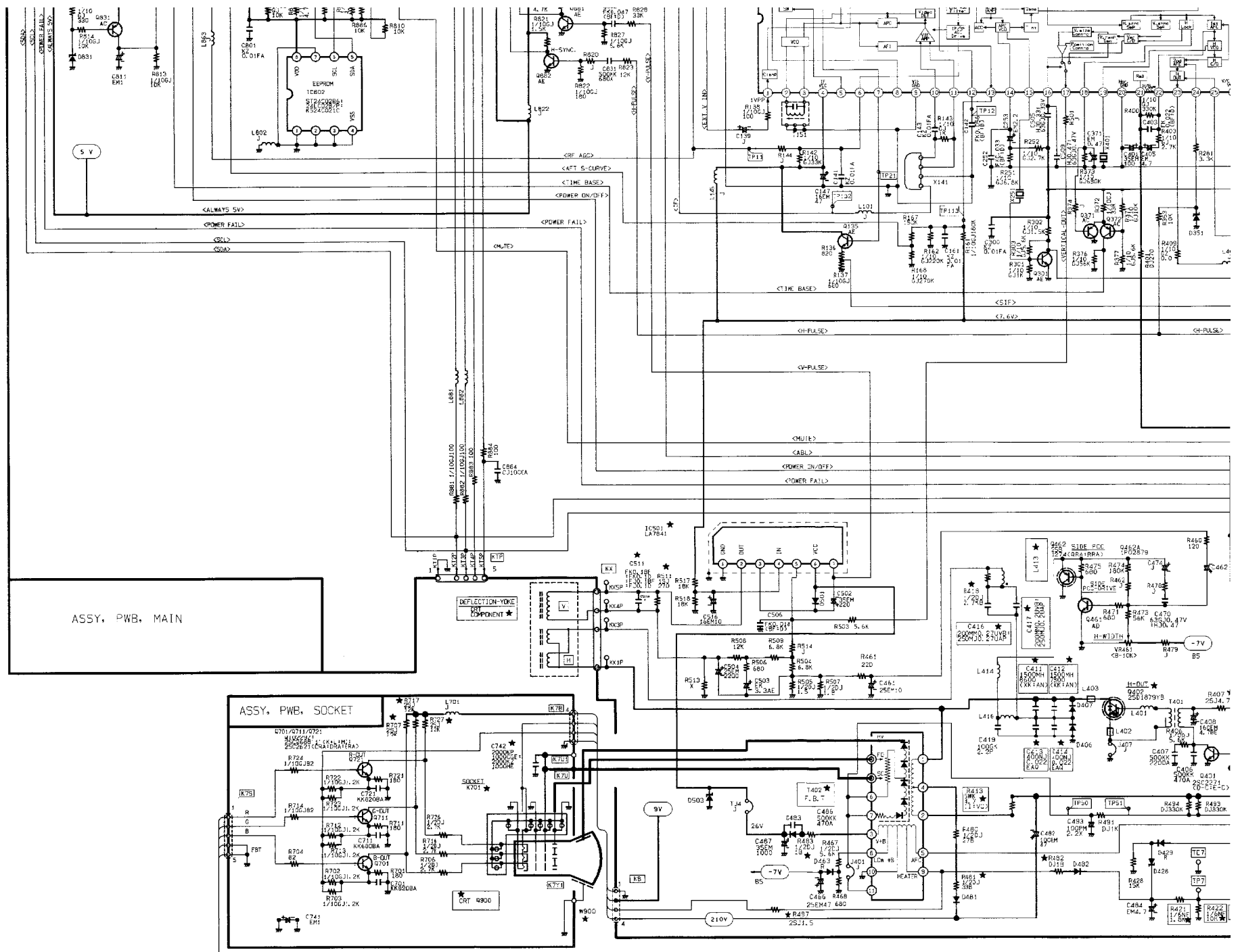
Device/Pin #	Volts/Mode
Q627-B	POWER ON: 10.8 POWER OFF: 7.3
Q627-C	POWER ON: 11.4 POWER OFF: 0.1
Q627-E	POWER ON: 11.6 POWER OFF: 7.3
Q635-B	POWER ON: 4.0 POWER OFF: 1.3
Q635-C	POWER ON: 30.5 POWER OFF: 9.3
Q635-E	POWER ON: 4.0 POWER OFF: 1.3
Q681-B	POWER ON: 0.7 POWER OFF: 0
Q681-C	POWER ON: 0 POWER OFF: 7.3
Q681-E	GND
Q688-B	POWER ON: 11.4 POWER OFF: 0.1
Q688-C	POWER ON: 0 POWER OFF: 0
Q688-E	POWER ON: 11.4 POWER OFF: 0.1
Q693-B	POWER ON: 0.5 POWER OFF: 6.2
Q693-C	POWER ON: 30.7 POWER OFF: 9.3
Q693-E	POWER ON: 0.7 POWER OFF: 5.7
Q695-B	POWER ON: 30.7 POWER OFF: 9.0
Q695-C	GND
Q695-E	POWER ON: 30.8 POWER OFF: 9.3
Q701-B	3.0
Q701-C	147
Q701-E	2.6
Q711-B	3.0
Q711-C	144
Q711-E	2.8
Q721-B	2.7
Q721-C	143
Q721-E	2.6
Q831-B	4.3
Q831-C	4.9
Q831-E	4.9
Q881-B	0
Q881-C	4.7
Q881-E	GND
Q882-B	0
Q882-C	4.5
Q882-E	GND

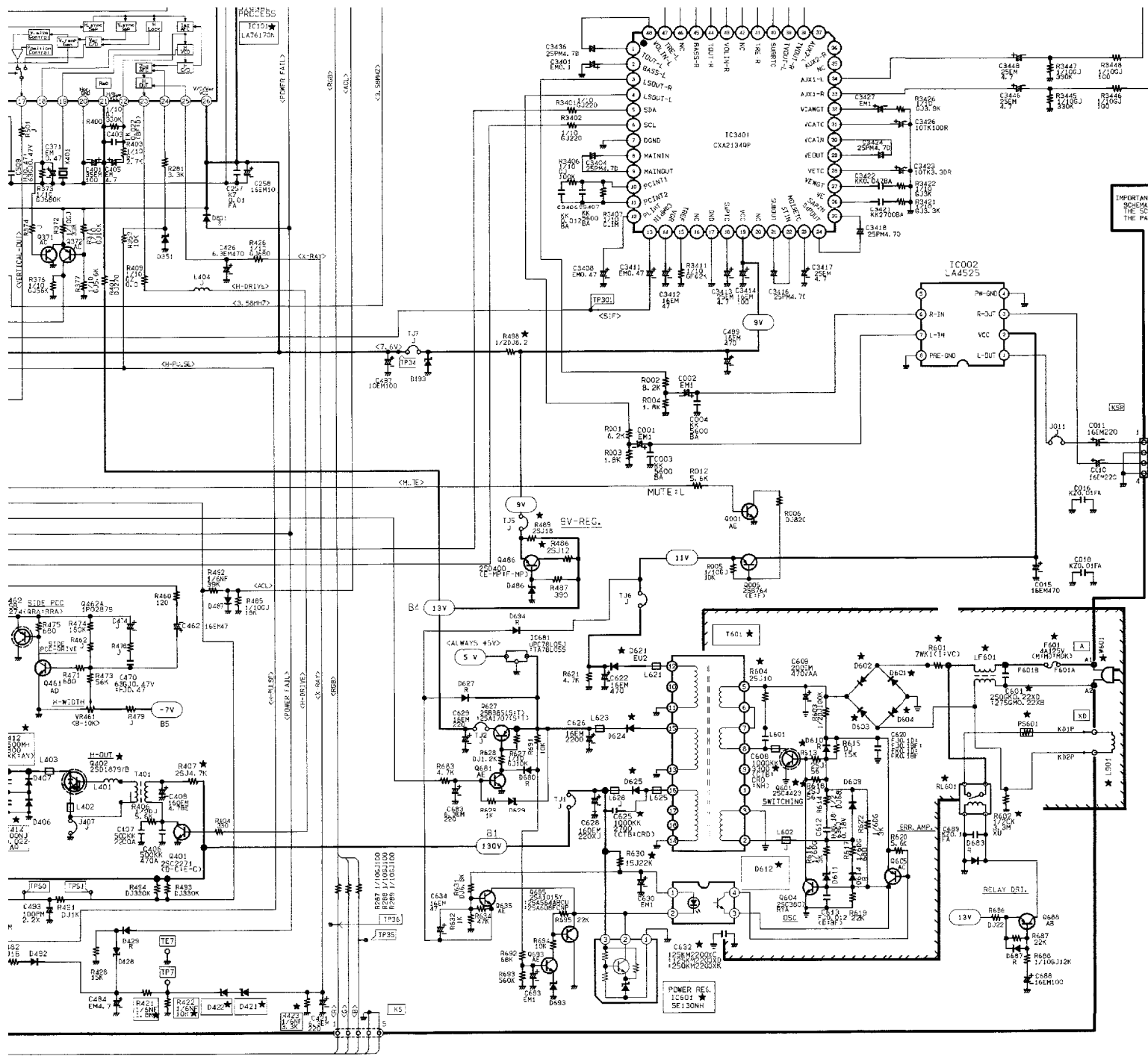
Device/Pin #	Volts/Mode
Q1071-B	2.6
Q1071-C	9.1
Q1071-E	1.9





IMPORTANT:
SCHEMATIC PART LOCATION NUMBERS MAY NOT ALWAYS MATCH THE SCHEMATIC SYMBOLS.
THE SCHEMATIC SYMBOLS AND PART DESCRIPTIONS ARE CORRECT AND SHOULD BE USED.





COLD SIDE | HOT SIDE

6. LIST OF REPLACEABLE DIODES.

H (78000025)	155176, 155133, 0MA01
R (70500018)	152076, 152473, 05442, 1N4146
AA (70200182)	152076, 152473, 05442, 1N4146, 155133
P (70000021)	152076, 152473, 1N4146

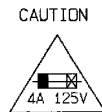
9. LIST OF REPLACEABLE TRANSISTORS.

	25C1705	25C454	25C1815
AD (71200183)	Q, R, S	Q, P	Y, GR
AE (70700202)	Q, R, S	Q, P	Q, Y, GR
AB (71200181)	R	R	Y, GR
AC (71200182)	Q, R	Q, R	Q, Y, GR

10. "J" = JUMPER WIRE.

"X" = PART NOT USED.

IMPORTANT: SCHEMATIC PART LOCATION NUMBERS MAY NOT ALWAYS MATCH THE SCHEMATIC SYMBOLS. THE SCHEMATIC SYMBOLS AND PART DESCRIPTIONS ARE CORRECT AND SHOULD BE USED. THE PART DESCRIPTIONS WILL BE LISTED UNDER THE LOCATION NUMBER IN THE PARTS LIST.



CAUTION FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH THE SAME TYPE 4A, 125V FUSE.

ATTENTION: POUR MAINTENIR LA PROTECTION CONTRE LES RISQUES D'INCENDIE UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE 4A, 125V.

For parts or service contact
SANYO Fisher Service Corporation
21605 Plummer Street
Chatsworth, CA 91311 (U.S.A.)
300 Applewood Crescent,
Concord, Ontario L4K 5C7 (CANADA)

May / 2000 / 2170 SMC

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Notice

SANYO

☐ CORRECTION
☐ SERVICE FLASH

☒ PRODUCTION CHANGE
☐ ADD INFORMATION

FILE NO. C - 2481

REVISION 3

Please add this notice to the Service Manual listed below.

Category: COLOR TELEVISION	Date: NOVEMBER / 20 / 1999
Model: DS31590	Effective from: Chassis No. 31590-02
Destination: U.S.A.	REF: No. SM780055

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. If the Service Manual Chassis No. does not match the unit's, additional Service Literature is required. This chassis is similar to Chassis No. 31590-00. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-00 used in Model D31590 (SM780055).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 12, Chassis Electrical Parts List	★C417	Old	403 082 9818	POLYPRO 0.33U J 200V	1	NO	D
		New	403 078 9726 403 346 6822	MT-POLYPRO 0.2U J 200V MT-POLYPRO 0.2U J 250V	1	NO	
	C461	Old	403 051 0607	ELECT 4.7U M 50V	1	NO	D
		New	403 044 6609	ELECT 10 U M 25V	1	NO	
Page 18, Chassis Electrical Parts List	R460	Old	401 026 9303	CARBON 47 JA 1/6W	1	NO	D
		New	401 024 9008	CARBON 120 JA 1/6W	1	NO	
	R461	Old	401 026 0607	CARBON 270 JA 1/6W	1	NO	D
		New	401 025 7409	CARBON 220 JA 1/6W	1	NO	
	R506	Old	401 026 9600	CARBON 470 JA 1/6W	1	NO	D
		New	401 027 5205	CARBON 680 JA 1/6W	1	NO	
	R509	Old	401 026 9907	CARBON 4.7K JA 1/6W	1	NO	D
		New	401 027 5502	CARBON 6.8K JA 1/6W	1	NO	

Parts list continued on back.

G7ECM, PRODUCT CODE 111341080

REFERENCE No. SM780055-03

1. IN THE CHASSIS ELECTRICAL PARTS LIST (Continued)

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 20, Chassis Electrical Parts List	A100	Old	610 278 0888	ASSY, PWB, MAIN BRD	1	NO	D
		New	610 283 5168	ASSY, PWB, MAIN BRD	1	NO	
	★Q900	Old	414 009 5407 414 009 5704	CRT M78JUA068X78 CRT M78LKU30X12(W)	1	NO	D
		New	414 010 6103	CRT M78JUA361X71	1	NO	

For parts or service contact

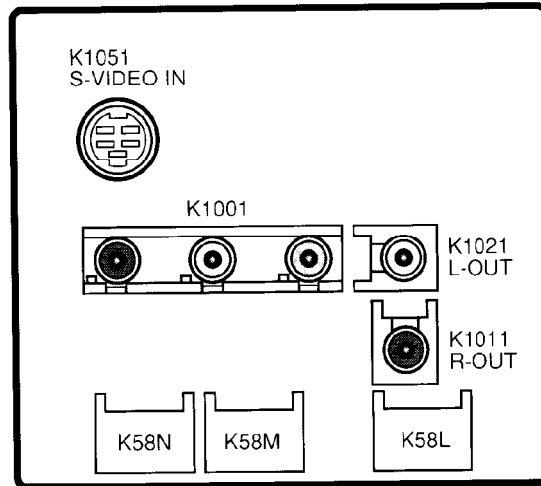
SANYO Fisher Service Corporation

**21605 Plummer Street,
Chatsworth, CA 91311**

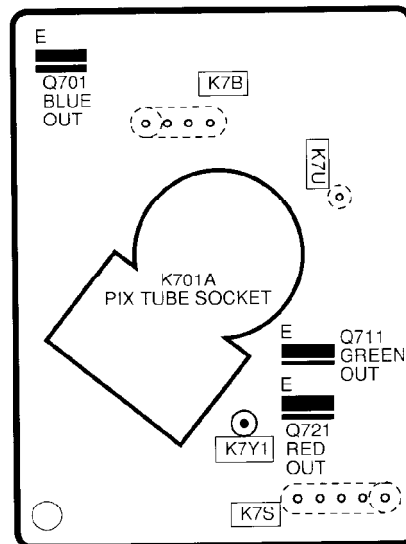
November / 1999 / 2000 SMC

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A/V BOARD



PICTURE TUBE SOCKET BOARD



Notice



- ☐ CORRECTION
 ☒ PRODUCTION CHANGE
☐ SERVICE FLASH
 ☐ ADD INFORMATION

FILE NO. 6-2481

REVISION 2

Please add this notice to the Service Manual listed below.

Category: COLORTELEVISION	Date: SEPTEMBER / 20 / 1999
Model: DS31590	Effective from: Chassis No. 31590-00
Destination: U.S.A.	REF: No. SM780055

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. If the Service Manual Chassis No. does not match the unit's, additional Service Literature is required. This chassis is similar to Chassis No. 31590-00. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-00 used in Model DS31590 (SM780055).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

- A : Misprint B : Quality Reliability C : Standardization
 D : Design E : Add as a possible sub F : Schematic location change
 G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 12, Chassis Electrical Parts List	★C411	Old	404 069 6407 404 077 5003	MT-POLYPRO 8600P H 1.5K MT-POLYPRO 8600P H 1.5K	1	YES	E
		New	404 069 6407 404 077 5003 403 343 8512	MT-POLYPRO 8600P H 1.5K MT-POLYPRO 8600P H 1.5K MT-POLYPRO 8600P H 1.5K	1	YES	
	★C412	Old	404 068 6200 404 077 4709	MT-POLYPRO 8000P H 1.5K MT-POLYPRO 8000P H 1.5K	1	NO	D
		New	404 068 6101 404 077 4600 403 083 4317	MT-POLYPRO 7800P H 1.5K MT-POLYPRO 7800P H 1.5K MT-POLYPRO 7800P H 1.5K	1	NO	
	★C413	Old	403 083 4911	POLYPRO 0.027U J 400V	1	NO	D
		New	403 083 4317	POLYPRO 0.022U J 400V	1	NO	
	★C416	Old	403 082 9016	POLYPRO 0.27U J 200V	1	YES	E
		New	403 082 9016 403 346 7126	POLYPRO 0.27U J 200V MT-POLYPRO 0.27U J 250V	1	YES	
	★C417	Old	403 082 9818	POLYPRO 0.33U J 200V	1	NO	D
		New	403 082 8415 403 346 6921	POLYPRO 0.22U J 200V MT-POLYPRO 0.22U J 250V	1	NO	

G5RAM, PRODUCT CODE 111341080

REFERENCE No. SM780055-02

1. IN THE CHASSIS ELECTRICAL PARTS LIST (Continued)

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchangeability	Reason
Page 12, Chassis Electrical Parts List	C461	Old	403 051 0607	ELECT 4.7U M 50V	1	NO	D
		New	403 050 6600	ELECT 3.3U M 50V	1	NO	
	C462	Old	403 038 1603	ELECT 100U M 6.3V	1	NO	D
		New	403 043 9106	ELECT 47U M 16V	1	NO	
	C503	Old	403 205 4703	ELECT 4.7U K 25V	1	NO	D
		New	403 204 1802	ELECT 3.3U K 50V	1	NO	
Page 13, Chassis Electrical Parts List	D428	Old	407 099 7109 407 054 5904	ZENER DIODE MTZJ15C ZENER DIODE RD15EB3	1	NO	D
		New	407 099 7208 407 054 7007	ZENER DIODE MTZJ16A ZENER DIODE RD16EB1	1	NO	
Page 18, Chassis Electrical Parts List	R460	Old	401 026 9303	CARBON 47 JA 1/6W	1	NO	D
		New	401 027 8107	CARBON 82 JA 1/6W	1	NO	
	R461	Old	401 026 0607	CARBON 270 JA 1/6W	1	NO	D
		New	401 026 3905	CARBON 330 JA 1/6W	1	NO	
	R503	Old	401 027 5502	CARBON 6.8K JA 1/6W	1	NO	D
		New	401 027 2600	CARBON 5.6K JA 1/6W	1	NO	
	R504	Old	401 027 8602	CARBON 8.2K JA 1/6W	1	NO	D
		New	401 027 5502	CARBON 6.8K JA 1/6W	1	NO	
	R505	Old	401 006 8104	CARBON 1.2 JA 1/2W	1	NO	D
		New	401 006 8401	CARBON 1.5 JA 1/2W	1	NO	
	R507	Old	401 006 7602	CARBON 1 JA 1/2W	1	NO	D
		New	401 006 8807	CARBON 1.8 JA 1/2W	1	NO	
Page 20, Chassis Electrical Parts List	R508	Old	401 025 1902	CARBON 15K JA 1/6W	1	NO	D
		New	401 024 9701	CARBON 12K JA 1/6W	1	NO	
	R509	Old	401 026 9907	CARBON 4.7K JA 1/6W	1	NO	D
		New	401 027 8602	CARBON 8.2K JA 1/6W	1	NO	
	★Q900	Old	414 009 5407 414 009 5704	CRT M78JUA068X78 CRT M78LKU30X12(W)	1	Yes	D
		New	414 009 5407	CRT M78JUA068X78	1	Yes	

For parts or service contact

SANYO Fisher Service Corporation

21605 Plummer Street,

Chatsworth, CA 91311

September / 1999 / 2000 SMC

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Notice

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☐ ADD INFORMATION

FILE NO. C-2481

REVISION 1

Please add this notice to the Service Manual listed below.

Category: <u>COLOR TELEVISION</u>	Date: <u>MAY / 20 / 1999</u>
Model: <u>DS31590</u>	Effective from: Chassis No. <u>31590-01</u>
Destination: <u>U.S.A.</u>	REF: No. <u>SM780055</u>

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual. If the **Service Manual Chassis No. does not match the unit's**, additional Service Literature is required. This chassis is similar to Chassis No. 31590-00. Only the **Difference** Service Information is given in this manual. For detailed Service Information, refer to the **Original** Service Manual and **Notices** for Chassis No. 31590-00 used in Model D31590 (SM780055).

1. IN THE CHASSIS ELECTRICAL PARTS LIST

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchange-ability	Reason
Page 12, Chassis Electrical Parts List	★C411	Old	404 069 6407 404 077 5003	MT-POLYPRO 8600P H 1.5K MT-POLYPRO 8600P H 1.5K	1	NO	D
		NEW	404 068 6101 404 077 4600	MT-POLYPRO 7800P H 1.5K MT-POLYPRO 7800P H 1.5K	1	NO	
	★C412	Old	404 068 6200 404 077 4709	MT-POLYPRO 8000P H 1.5K MT-POLYPRO 8000P H 1.5K	1	NO	D
		NEW	404 068 6101 404 077 4600	MT-POLYPRO 7800P H 1.5K MT-POLYPRO 7800P H 1.5K	1	NO	
	★C413	Old	403 083 4911	POLYPRO 0.027U J 400V	1	NO	D
		New	403 083 4317	POLYPRO 0.022U J 400V	1	NO	
	★C417	Old	403 082 9818	POLYPRO 0.33U J 200V	1	NO	D
		New	403 082 8019	POLYPRO 0.2U J 200V	0	NO	
	C461	Old	403 051 0607	ELECT 4.7U M 50V	1	NO	D
		New	403 049 9803	ELECT 2.2U M 50V	1	NO	
	C503	Old	403 205 4703	ELECT 4.7U K 25V	1	NO	D
		New	403 204 1802	ELECT 3.3U K 50V	1	NO	

1. IN THE CHASSIS ELECTRICAL PARTS LIST (Continued)

The reason for change.

A : Misprint B : Quality Reliability C : Standardization
D : Design E : Add as a possible sub F : Schematic location change
G : Purchasing Request

Page & Section	Schematic Location		Part No.	Description	Q'ty	Interchange-ability	Reason
Page 13, Chassis Electrical Parts List	D428	Old	407 099 7109 407 054 5904	ZENER DIODE MTZJ15C ZENER DIODE RD15EB3	1	NO	D
		NEW	407 099 7208 407 054 7007	ZENER DIODE MTZJ16A ZENER DIODE RD16EB1	1	NO	
Page 18, Chassis Electrical Parts List	R460	Old	401 026 9303	CARBON 47 JA 1/6W	1	NO	D
		New	401 026 3905	CARBON 330 JA 1/6W	1	NO	
	★R497	Old	401 057 9105	OXIDE MT 1.2 JA 1W	1	NO	D
		New	401 066 3002	OXIDE MT 2.2 JA 2W	1	NO	
	R503	Old	401 027 5502	CARBON 6.8K JA 1/6W	1	NO	D
		New	401 027 2600	CARBON 5.6K JA 1/6W	1	NO	
	R504	Old	401 027 8602	CARBON 8.2K JA 1/6W	1	NO	D
		New	401 024 7400	CARBON 10K JA 1/6W	1	NO	
	R505	Old	401 006 8104	CARBON 1.2 JA 1/2W	1	NO	D
		New	401 006 8401	CARBON 1.5 JA 1/2W	1	NO	
	R506	Old	401 027 5205	CARBON 680 JA 1/6W	1	NO	D
		New	401 026 6609	CARBON 390 JA 1/6W	1	NO	
	R507	Old	401 006 7602	CARBON 1 JA 1/2W	1	NO	D
		New	401 006 8807	CARBON 1.8 JA 1/2W	1	NO	
	R509	Old	401 026 9907	CARBON 4.7K JA 1/6W	1	NO	D
		New	401 024 7400	CARBON 10K JA 1/6W	1	NO	
Page 20, Chassis Electrical Parts List	A001	Old	610 278 0888	ASSY, PWB, MAIN BRD	1	NO	D
		New	610 278 4602	ASSY, PWB, MAIN BRD	1	NO	
	★PS601	Old	408 038 5606	THERMISTER	1	NO	D
		New	408 006 7304	THERMISTER	1	NO	
	★Q900	Old	414 009 5407 414 009 5704	CRT M78JUA068X78 CRT M78LKU30X12(W)	1	NO	D
		New	414 010 1900	CRT A79ECK262X54	1	NO	

For parts or service contact

SANYO FISHER SERVICE

1411 West 190th Street, Suite 800,

South Bay Corporate Center, Gardena, CA 90248

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